

SUPPLEMENT.

The Mining Journal, RAILWAY AND COMMERCIAL GAZETTE: FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

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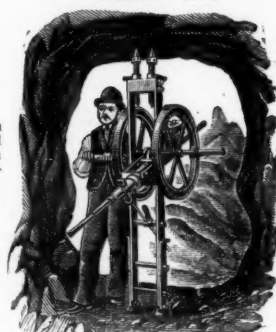
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Original Correspondence.

MINING IN IRELAND—No. VIII.

CONVERSATION BETWEEN A FATHER AND SON.

FATHER.—We will resume lead and copper mining, as agreed upon last time.

SON.—I had no idea that these minerals were so widely diffused throughout Ireland.

FATHER.—To notice in detail the localities of those and other minerals would be out of the question, but it is my intention to give you all the information I can regarding the places where minerals have hitherto been discovered in large and in many instances paying quantities.

SON.—Is there any iron ore in Ireland, father—that is, I mean in quantity that would pay for working?

FATHER.—Iron ores of three kinds occur in large quantities in many parts of Ireland. Formerly Ireland was an iron manufacturing country, and supplied the English markets. The giant strength, however, of that industry in this country has rendered it impossible for the Irish to compete with our great iron kings. Notwithstanding this a good deal of iron ore is now exported from Antrim and other places. We will enter more fully into the merits of iron ore mining when the proper time arrives—that is, when lead and copper have received their full measure of our attention. In the limestone formation near Kilmaree, in Kerry, some lead veins have been discovered, which give promise of productiveness in depth, but which have not been worked to any extent, though some comparatively superficial trials were formerly made. West of Bantry, in the clay-slate formations of Cork, some lead ore veins were opened on 20 years ago, and though the indications were of a favourable nature I have had no information which points to a continuation of the workings. Also on the south shore of Dunmanus Bay, and east of the Three Castle Head, in a powerful east and west quartz lode, galena was found associated with copper and iron pyrites. At Ringabella Creek, south of the City of Cork, some veins of lead ore are seen in the carboniferous slate, one of which has been worked from time to time, and quantities of rich ore shipped to England, but as no mechanical power was employed only superficial operations were resorted to; hence the mines are improved, and are in all probability a good speculation if taken up and worked vigorously. Lead ore has been met with in various localities in the granite and mica slate districts of Connemara, but no workings to speak of have yet been entered upon. In the same class of rocks in Donegal lead veins have been found, and at Kildrum a mine was worked for some time by the Mining Company of Ireland; it has, however, for a long time been given up. The limestone formation affords numerous indications of minerals, principally lead ore, copper pyrites, iron pyrites, and blende, have been found only in small quantities, but galena alone has been met with in large and paying quantities.

SON.—Would you recommend money to be expended in mining operations for lead ore at all the places you have just named?

FATHER.—Some of the places I have described are well worthy the attention of enterprising men, and I have no doubt may be very profitably worked, subject, of course, to the selection and subsequent supervision of thorough mining experts. The number of localities in which lead ore has been found in the limestone districts are very considerable, and some of the lodes have proved of value. Near Dublin, at Clontarf, a vein of lead ore associated with blende appeared on the sea shore, where it was wrought till the tide broke in on the workings, and the mine became filled up with water. In almost every direction round Dublin small veins of galena have been found in the Calp, as at Dolphin's Barn, Castleknock, Kilmaham, &c., but none of them maintained their produce to any depth, or were of a magnitude which would justify any extensive trials. In the counties of Meath, at Deapaurce and Athboy, and of Kilkenny in several localities, lead ore has been found, but only at Floodhall was a mine ever actually worked; from it considerable profit is said to have been derived, the lead extracted having been very rich in silver; no workings are at present carried on. In Longford, close to the town, lead ore has been raised, and in Kildare, at Wheatfield, on the banks of the Grand Canal, a large deposit of pure galena was found in connection with a vein of calcareous and brown spars, on which extensive works were erected, but after some time the store of mineral was exhausted. Having said so much respecting lead, we will defer further remarks till our next conversation; and as copper mining stands first on our list of minerals after lead, we will go into that important Irish product.

SON.—What district will you describe now, father?

FATHER.—We will follow Dr. Kane into Cork and Kerry, and supplement his remarks with anything of importance that has been moving in more recent times.—The South-Western District: The space occupied by the clay-slate formation in the counties of Cork and Kerry has been found rich in mineral indications, but in many cases where trials have been made, often at very great expense, the result has been unpromising. Of these failures many may be traced to incompetency or imprudence of the undertakers, but others to the peculiarities in the nature of the ground which could not be foreseen, unless by thoroughly competent mining men. You remember my telling of two kinds of lodes, John, one of which should be avoided, while the other is the real receptacle of mineral treasures, and I need not tell you it is very important to be able to distinguish the one from the other, and understand the respective merits of each. It is an old adage—"A little learning is a dangerous thing," and it is especially so in mining. "Some mines have been remarkably productive, of which the Allihies Mines, belonging to Mr. Puxley, and conducted by Capt. Read, is an excellent example." Now called Berehaven, and worked by a company; it has been one of the most productive copper mines in the kingdom for the past 35 or 40 years. "Although indications of metalliferous veins have been noticed in all parts of this vast district, it is especially towards its edge round the sea coast, where it is more in contact with or in the vicinity of the older slate, that the more important deposits are found, and hence proceeding from east to west we may trace the series of mining localities of greater or less importance from Skibbereen in Cork to Kenmare and Killarney. Between Skibbereen and Skull, at the village of Ballydehob, a vein of copper ore was found of considerable extent upon the surface, and of good produce. This mine was worked with activity for about four years; it gave employment to about 200 persons, and many thousands of ore were shipped to Swansea. About ten miles west of Skibbereen, on the property of Lord Audley, are metalliferous veins in great number, on which mines have been opened known as the Audley Mines, and which, like the Arigna Iron Company, have been the means of bringing into disrepute Irish industrial enterprises through the fault of jobbing speculators. The district of these mines comprises about 5500 acres. The principal lodes are three in number, not far asunder; the first consists of quartz, with bright yellow copper and iron pyrites, which has been found to contain usually about 8 per cent. of copper; in the second, which has been but little worked upon, particles of carbonate of copper (malachite), with nodules of grey sulphuret of copper, are disseminated through the clay-slate rock; the third, the Cappagh lode, is that which was principally worked upon; it contained copper pyrites and grey copper ore; the produce was so rich as to give 55 to 65 per cent. of copper." These good old mines, called the Cappagh and Ballycumisk Copper Ore Mines, are now, I believe, standing idle; one of them, the latter, was operated on by the enterprise of an individual for many years, large quantities of ore obtained, and the mine sunk to about 300 fms. deep, and I presume good profits made, but after the concern passed into the hands of a company the same amount of success did not attend the undertaking. It is asserted, however, by many that these are good mines yet, and instead of changing the management frequently (as has been unfortunately the case), if one of the good old practical mining veterans which the district possesses some were entrusted with the working of the mines jointly under the direction of a mining expert—that is, of course, you understand a mining engineer of large and varied experience—the chances of successfully reviving a remunerative industry would be all but certain.

SON.—Are there any other mines or mineral indications in the district of which you are speaking, father?

FATHER.—Yes, John; in former days a good deal of activity was

displayed in mining in the West Carbery district. In several instances, however, lodes of but little promise were attacked, and large amounts of money expended, which ignorant or culpable incidents have reacted frightfully on the whole district, so that money in sufficient quantities for proving and opening up the really good concerns (of which there are no doubt some in the district) cannot now be obtained.

SON.—Then this is another instance of working the wrong kind of veins.

FATHER.—Quite so, John. Dr. Kane wrote still further of this locality in 1845 as follows:—"At Horse Island the ore near the surface yielded in some cases 55 per cent. of copper, and 230 tons, which were sold at Swansea, realised 2800*l.*, but on the shaft being sunk to the 40 fms lode became impoverished, and the Mining Company surrendered their lease to the proprietor of the soil. A company was afterwards formed in London which purchased at an enormous sum, upwards of 100,000*l.*, the right of working these abandoned mines, and their affairs have been in litigation ever since. The whole produce sold by this company (the West Cork Mining Company) appears by the Swansea returns to have been 173 tons of ore, which realised 1601*l.* 12*s.* A company formed as this was could not come to good in any way, and it is to be hoped that the future operations in this field may be executed by persons more deserving of success, and more competent to secure it. South of the district of the Audley Mines, on the shores of Roaring Water Bay, are situated the mines of Roaring Water. At Roaring Water the lode is friable quartz and gossan, with bunches of black and grey copper ore. As the workings descend this passes into rich yellow copper pyrites, which is described as free from iron pyrites. This is a new mine; I do not know that it has yet sent any ore to market. Of the mines of Cosheen and Skull the former is situated on the shore, the latter on the island of that name. The Cosheen Mine was commenced in 1839 by Messrs. Connell and M'Mullen, of Cork; it is advantageously situated on the side of a hill at Skull Harbour. A deep adit level has been driven in just above high water mark for about 250 fms. on the course of the principal lode; this adit drains the mine, and by it the ore is extracted on a railway. The adit is now being driven further south to cut some parallel lodes which had been superficially explored. The number of hands employed is about 130, and I trust that its proprietors will continue to receive the benefit they deserve for an enterprise which has brought comfort to 100 families that had previously no employment. The ore from these mines, which are but a short time open, was as is given in the Swansea returns—In 1840, Cosheen, 125 tons, value 1164*l.* 2*s.*; 1843, Cosheen, 360 tons, value 2605*l.* 15*s.*; 1843, Skull, 84 tons, value 1341*l.* 8*s.*"—*New Cross, London, Feb. 24.*

SILVER ORE IN IRELAND.

SIR.—I venture to ask your permission to insert a few lines in the *Mining Journal* respecting a discovery which has been brought under my notice in the county of Cork of the "seleniuret of silver and copper" (eukairite), which occurs in a large lode of calcareous spar, and as I am not aware that this rare mineral has hitherto been found except in Sweden I wish to make known the fact that capitalists need not go 10,000 miles away in search of that which exists at home.

Cork, Feb. 23.

E. F. DAVIS, C.E.

ON AIR COMPRESSING.

SIR.—The force of compressed air as a motive power in coal and other mines is of growing importance, and in the light of its limited application to the mines of this country may be said to be still in its infancy, but there is no doubt of its being a power in the working of mines that is capable of being applied to numerous purposes which are as yet scarcely thought of. The necessity of mechanical appliances as a substitute for hand labour is more and more felt as competition with other coal-producing countries curtails the export of coal; new and cheaper modes of working coal must, therefore, be resorted to to resist this competition and, if possible, maintain our position in the markets of the world. Owing to the depression of trade prevailing during the past few years, endeavours have been made to cheapen the production of coal as much as possible; this has been counteracted in some degree by the stoppage of trade arising from the strikes of workmen, from the short hours of labour, and from interest on the expensive plant of most collieries, which, as a rule, is idle or not used more than half of the day. It is to the use of compressed air in conjunction with mechanical appliances that we must look for more reliable, safer, and cheaper means of working coal mines.

The American States and Germany have made rapid strides of late years in the production of coal and iron; but, seeing the vast mineral resources of the United States, the loss of trade to that country is only what we should expect, as their own resources have become developed—in fact, enabling the States to export coal, iron, and machinery largely to other and distant countries. It is now a question with the British colliery owners whether or not the collieries can be carried on under the present system of raising large quantities of coal with little or no profit in the hope of competing successfully not only with foreign countries, but in the competition of one district with another in the London and other markets of this country.

The pressure of air has been successfully applied at the Hottinguer shaft of the Epinau Mines, in France, for raising coal in a pit of 656 yards in depth, and will ultimately be 1093 yards, the cage and load being enclosed in a large tube—5½ ft. diam.—and raised or lowered by the action of a large steam-engine exhausting the air in the upper part of the tube. The air of the mine fills the lower part of the tube as the train rises, and thus assists the ventilation, and in some cases it is understood the raising of the mineral and the entire ventilation of the mine can be effected by this appliance, winding-engines, fans, and furnaces for ventilation being thus dispensed with. The tube 5½ ft. diameter is of wrought-iron 5-16 in. thick, bolted together in lengths of 4½ ft. The weight of 659 yards in height of tube is 345 tons. It has been in operation since July, 1876. Two steam cylinders, 63 in. diam. by 2 ft., serve to exhaust the air.

The compressed air plant erected at the Lower Duffryn Colliery, in South Wales, is perhaps of the most approved form of all erected in this country, and has been described by Mr. Craig, the president of the North Staffordshire Institute of Mining and Mechanical Engineers, in a recent address. The compressor consists of a pair of steam cylinders, 34 in. diameter, and a pair of air compressors of 40 in. diameter and 6 ft. stroke; average steam pressure, 49 lbs.; air pressure at the receiver, near the compressors, 43 lbs. per square inch; pressure in the cylinders of hauling-engines, 44 lbs. per square inch. This compressor is now driving nine engines underground, six being hauling-engines and three pumping-engines. The cost of the compressor was about 3000*l.* The cost of 6-in. pipes laid down for conducting compressed air to the several engines was 10*s.* per yard, the cost of 4-in. pipes being 7*s.* per yard. The cost of a hauling-engine having two 10-in. cylinders, and actuated by compressed air, is about 250*l.* This plant, though expensive in first cost, is safe and easily managed when in operation. The loss of power is stated to be small, and the convenience of the whole system, where power is required for driving hauling and pumping engines, rock drills, or coal cutters in mines, cannot be over-rated. The coal at Lower Duffryn being tender, there is no need to use coal cutters for undercutting it, but where there is a necessity for using them it is thought the most advantageous method of working them is not to generate the power not at the top of the pit, but near to the working places. This has not been done successfully as yet, except in a small way by hand labour. The nearest approach to this method of generating power is the proposition to use horse labour instead of steam and compressed air machinery, the horse power being exerted near to the working face.

The only feasible method of carrying out M. Blanchet's system of raising minerals and ventilating the mine with the same appliance (referred to above) seems to be the conveying compressed air through a tube (say) 2 to 3 ft. in diameter, from the pit to the extreme parts of the mine, having one or more branches of smaller diameter; this pipe could be tapped at any point for a supply of compressed air to actuate hauling and pumping engines, coal cutters, rock drills, &c. The exhaust from the various machines and the surplus of air in the large pipe would be expended in ventilating the mine with cool and fresh air at different points. The expense of such a pipe would be very great, otherwise there does not seem to be any objection prac-

tically to the plan. The two questions of the safe lighting of mines and the use of explosives would, however, still remain to be dealt with, and to tax the ingenuity of scientific men to invent some means for their rectification.

M. E.

PREVENTING COLLIERY EXPLOSIONS BY STEAM.

SIR.—Cornishmen are admitted to be fair practical metalliferous miners, although they would no doubt be all the better for a little scientific training, but I have never yet heard that they shine very brightly as colliers, and the invention recently patented by Mr. S. M. Rogers, of Truro, is not likely to add to their reputation in the latter capacity, since it is no less a proposition than the prevention of colliery explosions by steam, which he proposes should be conveyed through the workings of a coal or other mine by carefully clothed pipes, suitably arranged, and furnished at the different levels or workings with proper jets regulated by valves or stop cocks, whereby in case of gas being found to exist in any working place a considerable quantity of steam could at once be turned into it, so as to completely neutralise the explosive power of the gas; also by using the steam in small quantities during the day, the coal dust, which at present so much assists in producing explosions, would be precipitated and kept so moist as to be incapable of floating in the air of the levels. The steam may be obtained from the boilers existing at the surface or underground, or from special generators suitably arranged for the purpose. The invention is also applicable for neutralising or precipitating all gases or dust arising in the underground workings of mines from the blasting and breaking of rocks with gunpowder, dynamite, gun-cotton, or other explosive compounds, in which case the steam may be supplied by a portable boiler, moveable to any point of the work where blasting is being carried on, or where an accumulation of gas or dust has taken place therefrom.

Now, it seems evident to me that the inventor has not much connection with collieries, or he would have known that neither the cost of the piping nor the difficulty of keeping the steam uncondensed would permit of his project succeeding.

COAL.

Wigan, Feb. 24.

GOLD IN INDIA.

SIR.—It may, perhaps, be interesting to your readers who have seen Mr. Eastwick's interesting article on this subject in the *Gentleman's Magazine* for January last, to learn that during the period from Oct. 8, 1875, down to Nov. 9, 1877, when I was in the Wynaad, engaged first as manager of the Alpha Gold Mines, and subsequently in prospecting and exploring the several mines and reefs in that part of the district mentioned by Mr. Brough Smyth in his report, I became acquainted with various local and traditional beliefs which support the views expressed in Mr. Eastwick's valuable paper that this district is the veritable Ophir of the ancients, which opinion I entertained and expressed long before the arrival of the Mr. O. Pegler referred to in Mr. Eastwick's article. Mr. Pegler, who landed at Bombay on Sept. 19, 1877, travelled under the name of Mr. Oliver, and arrived at Seeputee, in the Wynaad, on Oct. 10, 1877. He was known by this pseudonym during his stay in the Wynaad, and he returned to Bombay Nov. 9, 1877.

Mr. Pegler was employed in the month of August, 1877, by Messrs. W. Nicol and Co., of Bombay, through their London house, Messrs. Smith, Fleming, and Co. He left for Bombay by the mail on the 31st of that month to inspect the mines, properties, and reefs in the Wynaad district, which I had brought to the notice of Messrs. W. Nicol and Co., and comprised within the area set out in Mr. Brough Smyth's report. I was the first pioneer and explorer of these mines as regards their present marketable value. It was I who first reported to Messrs. W. Nicol and Co. their value long before the arrival of Mr. Pegler in India, which report I made on May 14, 1877. My reports of their value are now more than verified by those of Mr. Brough Smyth. I have reason to believe that this gentleman was summoned to India from Australia by Lord Lytton's Government in consequence of the information which the Rajah of Nellore gave his Excellency at a breakfast which took place on Sept. 17, 1877, in the Ochtolony Valley. In a conversation which I was subsequently privileged to hold with the Viceroy I pointed out the great value of my discoveries, which virtually created a new industry in that part of India.

As an incident strengthening the argument advanced by Mr. Eastwick in his paper it should be borne in mind that Calicut (Kolkod) is a port of some extent, and that ships coming from the Red Sea and following the coast must in course of time arrive at the port of Calicut, and that the waters from the Neigherri hills and the Wynaad district empty themselves into that harbour, and that gold is found in the sand on the seashore. It will be remembered, too, that at certain seasons of the year the waters of the Arabian Sea, as well as those of the Red Sea and Gulf of Aden, are calm and still as a mill-pond.

With regard to the "Tamil" language (of which while in India I managed to pick up enough to understand and to make myself understood) referred to in Mr. Eastwick's paper, I would say that on one occasion in the month of February, 1877, when talking to an old man aged 85, to whom I was introduced by his son, my head Mining Korumbor on the Seeputee estate, the old man told me a tradition related to him by his father, and handed down from generation to generation, to the effect that in remote times strangers from foreign countries came in ships to Calicut and bartered their cargoes for the gold, ivory, and produce from the Wynaad district, in which we then were. This conversation arose out of my drawing attention to the ancient workings, some of which were large caverns. I made enquiries as to the workings of these caverns and the mode in which they were made. He gave me an account of the method which, as he had been informed, was adopted in ancient times, that of burning the reefs, and so on. In the lower parts of these hills the peacock is commonly found in a wild state.

Mr. Eastwick enquires whether Ophir, or one of his descendants, may not have migrated to India, and so given his name to the part in which the Arab colony settled. It is a curious fact that the Mining Korumbors are a distinct race from the other dwellers in these parts. Their religion is different, their appearance is different, notably in the fact of their not being flat-footed; they never marry with outsiders, they are proud of their descent from the ancient gold miners of that district; they do, in fact, constitute a distinct caste, and they are the finest and strongest men in that part of India. It would be curious, indeed, if it could be shown that the present Mining Korumbors are of Arabian origin.

To illustrate the statements made by Mr. Eastwick as to the passion in the rulers of that part of India for accumulating gold, I may mention that the present Rajah of Nellore, who is the owner of most of the land in the Wynaad district where the gold is found, maintains the tradition of his ancestors, year by year accumulating gold in his treasury. When I had the honour of an interview with his Highness in the month of January, 1877, he showed me blocks of gold stored away, which he called by a Tamil word meaning, I believe, ingots, he intimated to me that the gold which he then displayed had been the accumulation of many generations, and he also showed me gold dust stored up in earthenware pots.

As pointed out in Mr. Eastwick's paper the natives contrive to pick up some small portions of gold dust in the rudest mode of mining, with this they pay their rents and dues to the Rajah, in addition to labour, corn, and meats which the Rajah may require. By this means he and his servants are supplied with food, and for many generations gold has been stored up in ingots and gold dust as I have above mentioned. A reference to any map of India will equally show that the country of the ancient gold workers of India (whose mode of working is a tradition preserved as a secret among themselves), namely—Trichinappalli, Pondichery, &c., is not far distant from Calicut and the Wynaad district.

There can be no doubt as to the method of calcining the reefs as applied in the ancient workings. I found a notable illustration of this in the Skull reef referred to by Mr. Eastwick. It was I who gave the reef this name, and it arose in this way: after some two months or so of blasting and mining and clearing away the debris to make good the level I came on a spot showing considerable signs of calcining above and around me, while immediately ahead I encountered difficulties in the shape of debris which had fallen from above and around, and after having all this cleared away by the Mining Korumb-

bers I came upon a place where I found many human skulls, and here and there the hair which had fallen from them. I concluded that a body of Mining Korumbers had entered thus far after some burning, and that in mining, or accidentally, the roof and sides of the gallery had given way and fallen upon them, and so prevented their return through the gallery.

Wright's level in the Alpha Mine was driven by me in the Cornish manner on the same Skull reef, about a mile from the spot where the skulls were found. It was so driven because the Korumbers would not work in the shaft; I therefore determined to go to the other edge of the hill and drive in an adit on the course of the reef. I quite concur with Mr. Eastwick in his remarks upon the defective workings on the Alpha. While I was there as manager I pointed this out to the directors, showing the ruinous waste that was occurring, and that the machinery was so rude and defective as to cause a loss of 2 ozs. of gold to 1 oz. of gold preserved. Moreover, I showed the great expense as well as mistake in working by steam, there being ample water power to be had within a reasonable distance, and some water power on the estate itself, and in this view it was that the first purchase I made for the joint adventure into which I had entered with Messrs. Nicol and Co. and Mr. Morton was the Seepitue estate. This estate is registered in my name in the register at Ootacamund, and in it there is ample water power, if properly applied, to crush and wash and to return in a manufactured state all the gold which may be raised from the district described by Mr. Brough Smyth.

In conclusion, I may say it is a great misfortune—perhaps a national misfortune—that Mr. Oliver was unable to perceive, as I had advised Messrs. W. Nicol and Co., the value of these reefs and properties, for if he had, and if these gentlemen had forthwith carried out my agreement with them and Mr. Morton, I have no doubt their bankruptcy in Bombay, as also that of Messrs. Smith, Fleming, and Co., in London, would have been averted, and the Glasgow Bank could have been saved from ruin. I infer that this is the meaning of a remark made by Mr. John Fleming in his examination on the trial of the Glasgow Bank directors in January, 1879, when he is reported to have said that these gold mines were "the only ray of light in their affairs."—*Cardron House, Redruth, Feb. 24.* EDWIN HARRIS.

DON PEDRO NORTH DEL REY GOLD MINING COMPANY.

SIR,—I am instructed by the board to request your correction of the rumour circulated in last week's *Mining Journal*—that preference shares would be required to absorb a loss account of some 40,000. There is no foundation for this rumour, however "confidentially" it may have been stated as to explain its insertion in the *Mining Journal*.

I am directed further to inform you, that as the board have a substantial balance in hand there is no necessity for any "circular" stating the amount of money required for the future development of the concern." THOS. BERRY (for Managing Director).

London, Feb. 25

DON PEDRO MINING COMPANY.

SIR,—I consider the report of Mr. Dawson in last week's *Journal* quite foreign to the real state of the mine. He merely states that the bottom of the mine is reached, and a fair amount of mineral is obtained. Now, Sir, I happen to know from a source which I need not mention that the bottom of the mine has been reached for some weeks, and the lode which is being worked is immensely rich, much more so than when they paid great dividends some years ago. I would advise every shareholder to hold on at all hazards, and not part with shares for any consideration. VERITAS.

Feb. 24.

THE RIO TINTO MINE.

SIR,—Your correspondent "Investor," in his letter published in last week's *Journal*, very properly, I think, suggests caution in estimating an early payment of dividend by this company. On comparing the last three balance-sheets, it appears that the liabilities of the company at the end of each year stood as follows:—

	Capital.	Mortgage bonds.	Open cash liabilities.
Dec. 31, 1876	£2,250,000	£3,058,000	£ 917,903
Dec. 31, 1877	2,250,000	2,962,220	1,297,215
Dec. 31, 1878	2,250,000	2,851,760	1,478,424

Thus, it will be seen that whilst the open cash liabilities have increased during the last two years, as stated by "Investor," to the extent of 560,204, the amount of mortgage bonds have only been decreased during the same period to the extent of 206,240, and the total of the company's liabilities (as above) stood at the end of 1878 at 6,579,884, as against 6,225,903 at the end of 1876. There is no doubt that the management of the company is in very able hands, but to pay even 5 per cent. upon so large a sum as 6,579,884, will require a very large balance of profit on sales, without even taking into account the necessary sinking funds to meet repayment of mortgage bonds.—*London, Feb. 25.* AUDITOR.

FRONTINO AND BOLIVIA GOLD MINES—PESTARENA GOLD MINES.

SIR,—In a letter under the title of the "Profits of Gold Mining," which appeared in the *Journal* of February 14, the writer endeavoured to institute a comparison between the above-named companies, and his attempt to do so only displayed his utter want of correct information as to the actual position of the concerns. He states that the Pestarena Company's capital is similar to the Frontino—110,000, whereas the capital of the former I am sorry to say (for I speak feelingly as a shareholder) is about 247,000, and in addition to this about 25,000 accrued interest due on the preference capital. The prospects of these companies are widely different. The ordinary shareholders of the Pestarena will be fortunate if they ever get any return for their outlay, seeing that the company is so heavily weighted with preference capital (which is as a vampire sucking its blood), and its huge amount of accrued interest, whereas Frontino's prospects were never in the history of the mine so promising as at the present moment. The large profits now being made will henceforward, in consequence of the ample working capital now provided, be distributed as dividends. In my humble opinion its prospects are most cheering, and second to none that are quoted on the Stock Exchange, and that very quickly we shall see our shares double their present price. A SHAREHOLDER IN BOTH COMPANIES.

PORT PHILLIP AND COLONIAL GOLD MINING COMPANY.

SIR,—In justice to the proprietors of the above, I shall feel obliged by the insertion in the *Journal* of a few extracts from the directors' report and the Chairman's remarks at their recent annual meeting, whose mines since the commencement of operations in March, 1857, have yielded the enormous quantity of 459,447 ozs. 4 dwts. 13 grs. of gold, of the value of 1,837,688. 13s. 8d.; and for the year ending Dec. 31 last the balance to the credit of revenue, after payment of all expenses, amounted to 6757. 8s. 6d., out of which another dividend of 1s. 4d. per share was declared, free of income tax, and payable on March 1 next, leaving a balance of 2517. 8s. 6d. to be carried forward, besides leaving intact their reserve fund, invested in 6896. 4s. 6d. Consols. The latter provision worthy of imitation, but rarely practised by kindred undertakings. The directors' report further explains the purchase out of revenue of the Criterion Company's property, upwards of 20 acres in extent, adjoining the Clunes Mine, with valuable quartz in sight as approached from our own, where we also possess some of the most valuable machinery and other appliances, equal, if not superior, to any other company in the world.

The forthcoming dividend being upwards of 13 per cent. upon the price our shares are now quoted, I am, therefore, at a loss to conceive how the investing public can be lured, or what they can see in purchasing shares in a number of gold and silver mining companies recently quoted in the official list that have never paid any dividend, nor yet appear to have the remotest possibility of their ever doing so, but on the other hand are either engaged in ruinous litigation or on the very brink of liquidation, the latter contingencies even in the present year, although in its infancy, it has been my misfortune to experience already, yet those companies' shares have been and

are still quoted at prices exceeding the present quotations of the Port Phillip Mine, of which I am much pleased to say that I have a large holding, which I further increased a few weeks back, and intend to continue doing so. Having the fullest confidence both in the managerial departments and stability in the productiveness of our mines, which for the nonce are situated in our own colonies, and as regards my interest in them, it would require a much higher price than that reached very recently of nearly double the present quotation to succeed in tempting me to relinquish my investment, as well as of several of my acquaintances, who, like myself, will not be scared by the "bear" operations now so unduly depressing them. Feb. 26. AN ENGLISH CAPITALIST.

THE EBERHARDT AND AURORA, AND CRANSTON'S ROCK-DRILLS.

SIR,—I beg to inclose you a few notes and extracts from Captain Frank Drake's reports relating to the driving of the Eberhardt and Aurora tunnels with the Cranston rock-drill machinery, and their having had the good fortune to strike ore at a depth of about 14,000 ft. below the surface, which perhaps you are aware have advanced the shares lately by 100 per cent. In Mr. F. Drake's letter, Jan. 21, in the *Journal* he states, "I am pleased to be able to state that our prospects in the Eberhardt and Aurora Tunnel have greatly improved during the last 30 days, the last 100 ft. through which we have driven I think fully demonstrates the fact that there is ore at a great depth in Treasure Hill, and that the marvellous rich ore which has been found and extracted from near the surface of our mine is but a proportion of that which lies at greater depths. The progress for the past year has been all that could have been expected from the character of the ground through which the tunnel has been driven. The main tunnel has been driven 981 ft., making the total distance driven to Jan. 1 4823 ft. Total distance driven in Eberhardt drift, 1077 ft.; total distance driven in Upraise drift, 72 ft.: making the total number of feet driven in 1879, 2130 ft. Report progress for Jan. 26. Progress for week ending Jan. 24:—Eberhardt and Aurora Tunnel distance run to Jan. 17, 4909 ft.; distance run for week ending Jan. 24, 35 ft.; for month of January, 121 ft.: total distance run to Jan. 24, 4944 ft. The ground is very hard, and breaks badly, consisting of lime and spar."

It will be seen that the work has been done by the contractors, who have worked the drills creditably and satisfactorily, as well as rapidly and economically for the directors and shareholders.

If you will kindly point these facts out in your next issue it will very much oblige— J. G. CRANSTON.

NEWFOUNDLAND LAND COMPANY.

SIR,—Holding a considerable number of Newfoundland Land shares, I certainly did not fail to notice the great rise in price of these shares referred to in last week's *Journal*, but I was not tempted to sell at the increased values reached. The buyers know what they are about, and I would advise any of my brother shareholders who may be disposed to part with their shares first to inform themselves as to the causes which led to the increased dealing in them last week. If they do so, I think they will find that it was not without reason, and that we may see a very different price before long. A SHAREHOLDER.

A FEW WORDS ABOUT MINES.

SIR,—Fortunately the slight reaction in the metal market has had the beneficial effect of causing investors in mines to pause ere they have overreached themselves. It is a pleasure to notice the rest that the market has taken during the last week or so; no doubt but many of our best known mines have been sought after too eagerly by parties who forget to calculate what interest they ever could hope to get on their outlay, and many forget that the dividends declared when adjusted to the high premiums paid are not so likely to be satisfactory to them as to the original shareholders. No doubt we have some wonderfully rich mines; but even gold can be bought too dear. In the same way good dividend mines can be bought at too high a premium, and it may be well to consider if, although a dividend of 40 to 50 per cent. can be paid to the original shares, whether when such shares are bought at a high premium which reduces the rate to 2 or 2½ per cent., that rate will be considered satisfactory. No doubt this consideration is the cause in a great degree of the relapse of prices in several mines, and in sympathy other mines in no way associated with them fluctuate in price. The question may be asked—Has the rise in prices been justified? No doubt it has owing to the increased price of metals; but in some cases, particularly in most noted mines for tin and copper, the prices are quite high enough. As to our leading lead mines there is yet a margin enough for a considerable advance, and for this reason—the price of lead is not yet at the top, whereas it is very questionable if the price of tin and copper is not. The fact is, both metals are now at a price that it will pay foreign mines to work, and ship up their produce; consequently, it would be only short-sighted policy to wish for tin and copper to further advance. Far more healthy would it be to mining in this country did both tin and copper decrease in value 10 per cent. All our good mines would pay at such a price, and not only would it conduce to more extended trade; but, at the same time, it would in a great measure shut out foreign competition. Certainly our dividend mines that have of late changed hands at such high premiums might not be able to pay quite so large percentage on the late high prices as will satisfy present holders; but then the bulk of good mines, and they are numerous, that have perhaps advanced considerably from their recent unsaleable condition, but are yet at a fair reasonable price—as, for instance, Wheal Kitty (which on its merits ought compared with others to be at far higher price), South Conderrow, West Kitty, and New Kitty—a little later on are likely to easily pay 50 per cent. on present prices. Then we find The Lovell and East Lovell at nominal prices, while Mellanear and Wheal Crebor, with scores of others, afford at present prices (even with a considerable fall in value of tin and copper) the means of investing money safely and profitably.

Lead, as remarked, has the prospect of a further considerable advance when summer trade makes its requirements felt, and then it is to be considered in the lead trade that a very large quantity of the lead raised from our mines is destroyed, or at least dissipated, when employed in our various manufactures, an every-day example of which is white lead used in house-painting, besides which could be named the thousand and one arts and chemical requirements for lead, each more or less destroying its ordinary metallic condition, and thereby preventing it from coming again into competition with the produce of our mines.

This is a very important fact in the lead trade, and whereas in both tin and copper substitutes can with more or less success be employed, lead in the great bulk of its uses has no substitute. This, considered with the prospects of better trade here and abroad, there is no doubt but ere the year is much older we shall see lead at a considerable advance over present prices, and in the lead share market is likely to be seen an advance similar to that which has taken place in our tin mines. In paying lead shares I cannot notice one of them at all within many pounds per share of their true value. Why should Van, Roman Gravels, Tankerville, South Darren, Grogwinion, and others be at present prices? After a short time many will be asking themselves—Why did we miss them? Besides there are several other lead shares at a nominal value of a few pounds and some of shillings that are on the very eve of paying dividends with the present prospects of themselves and the lead market, and which in a short time from now are sure to spring to many times their present prices. Anyone wishing to look out now for well situated lead mines cannot be wrong. But look out for honest ones. Those that have been steadily at work during the late depression opening out and developing their ground are now sure to pay dividends, and increase hundreds per cent. in market value. Amongst this class we may notice East Roman Gravels, Glenroy, East Chiverton, Derwent, and others such like, all of which undoubtedly will now pay well for investment or speculation.

I shall not intrude further on your valuable space, except to say that those who feel that they would like to spend their money in developing our home industries, instead of squandering it on foreign

loans, and encouraging unprincipled foreign speculators, have at the present time an opportunity in British lead mining of not only doing so, but at the same time spending their money in such a way that it will not only increase their own capital, but at the same time increase the material wealth of our country, and provide employment for our population. J. B.

DEVON CONSOLS, AND WHEAL CREBOR.

SIR,—Can any of your readers explain the extraordinary relative position of these two mines?

Devon Consols, 10,240 shares at 177. is equal to 174,080. On this capital 8s. per share dividend has just been declared, but it is not stated how long it has taken to earn that dividend. This mine sold on Feb. 19 913 tons ore for 2709.

Wheal Crebor, 6000 shares at 97. equal to 54,000, just declared a dividend of 7s. 6d., and sold on Feb. 19 525 tons of ore, which realised 2369., or only 340. less than Devon Consols, and one does know the dividend has been earned in a very short time.

How, also, about the expenses? Devon Consols must be far heavier than Crebor. Say that the Devon Consols is a monthly and Crebor a bi-monthly sale of ore, and even that will not account for the difference. We know the Chairman of Devon Consols always does his utmost to show the value of the mine, and the public show their faith in his predictions of the shares going to 321. by putting them down to nearly half that price. Even the 40 per cent. puff and the great reserve could not prevent their drooping. However, it must be patent to everyone that either Devons are too high or Crebors too low, or else the magic of being "on the Stock Exchange" enables Devons to keep so much higher than Crebors. Why?

Feb. 24.

STOCK EXCHANGE.
A Holder in both.

DEVON COPPER AND BLENDE MINING COMPANY.

SIR,—Will you kindly insert the subjoined, which I received with an application for shares this morning? The shares in the company are being well taken up. People in the district who knew the mine in its former working have great confidence in the concern, and are applying for shares.—*Tavistock, Feb. 25.* W. BAWDEN SKEWIS, Sec.

DEAR SIR,—I have much pleasure, with two of my friends, in subscribing for 2000 shares in the Devon Copper and Blende Company. As an old investor, I know the Callacomb Mine well, and so must the inhabitants of Tavistock. Allow me to suggest that everyone in the town of Tavistock take a few shares. The shares are only 1s. per share, and what a magnificent thing it is for the fine old town starting again this splendid mine, which I believe, no blende is of so much more value, will turn out a second Devon Consols. If Callacomb has not the arsenic it has the blende, and in any quantity. There is no new speculation in this mine, every miner knows what is in Callacomb, and that so soon as the new company begin pumping so soon as they can, and that the agent of Sir Wm. Call. Bart., sold over 1300. of blende and copper by simply picking over the old heaps on the mine, and this not so very long ago. Feeling confident, as an old shareholder in the late company, that this mine will prove a success.—*London, Feb. 23.* L. E. G.

WEST DEVON GREAT CONSOLS.

SIR,—Anyone who will take the trouble to inspect the lode stuff on the new lode in this property, and the splendid stones of ore now being broken, will not fail to see its importance. The discovery is in the 30 fm. level, a depth where in the mine adjoining tens of thousands of tons of ore were broken, and which gave a profit of no less than 70,000. during the first 16 months of that company's existence. Need I say I allude to Devon Great Consols? The stratification—a rough killas—is identical at the two mines, and the lode produces arsenical muffle and copper ore, rich yellow sulphuret, and peacock ore. The shares have doubled in price this week, and it is asserted will be 5/ in less than a month. The only line of separation from Devon Great Consols, be it remembered, is the pretty little River Tamar, a merely superficial legal boundary. The mine is situated, as it were, in a hot bed, Devon Consols, Gunnislake (Clitters), and others close by, and with as fine a looking lode as is to be seen anywhere. Speaking to an old miner I came across in Tavistock, who had worked in Devon Consols 40 years ago, he said these words—"It is the best lode I have seen since those days, and I believe will be one of the prizes of 1880." A. LONGMAN.

London, Feb. 25.

WEST DEVON GREAT CONSOLS.

SIR,—I observe in your valuable *Journal* information is requested concerning this mine. If investors seeking a prize in mining properties will take the train from Waterloo Station, and run down to Exeter and examine for themselves the rich ores now discovered in this mine, will also remember that but a very thin silver streak—the Tamar river—separates it from the wealthy Devon Great Consols Mine; that the rich south lodes of this latter property are found to run direct into West Devon Great Consols; and above all that it is just the same depth as that when the great course of copper ore was cut in Devon Great Consols—then I am certain that he will decide to pick up all the shares he can purchase, and urge his friends to do the same. A rapid rise in these securities must at once follow, despite jealousy, and the opinion of all London brokers who have visited the mine must be rapidly verified by a high quotation of this property—likely, it is stated, to rise to 10/ per share. ONE WHO KNOWS.

London, Feb. 25.

WEST DEVON GREAT CONSOLS (LIMITED).

SIR,—In last week's *Journal* I notice a letter from one of your correspondents calling Attention to this promising and valuable property, divided from Devon Great Consols by the River Tamar, and having its now proved richest lodes running into it. Capt. James Richards, late manager of Devon Great Consols is also stated to have the highest opinion of this property, and that it would ultimately become as rich as its powerful neighbour. Brokers who have visited the mine have come away satisfied that great wealth is at hand, and that these shares must rapidly rise in value. It was stated that the shares in Devon Great Consols will soon see 34/ per share, and if the south lodes only prove as rich as the splendid specimens lately taken from the mine indicate, then undoubtedly the opinion entertained by practical men on the spot will be realised. Now shares in West Devon Great Consols are difficult to obtain, being firmly held by original holders and others; and the rising copper markets, together with the exceptionally splendid situation of this property and the discovery made. MINER.

LEAD MINES—GLENROY.

SIR,—Although I was aware of all that "A Permanent Shareholder" set forth in his letter in last week's Supplement concerning Glenroy Lead Mine I was much pleased to read his remarks, inasmuch as they were a corroboration of my own views and anticipations respecting it. Soon after the mine commenced operations I took an interest in it by purchasing some of the shares while they were at a premium. I bought at 8/ per share, and the following summer, being in the Isle of Man, I took the opportunity of looking at the property I was interested in, and from what I saw then in the shallow levels I felt convinced that in the course of time we should have a strong competition of the wealthy Great Laxey Mine. It has been necessarily a matter of time sinking the shaft; but the sinking has been going on surely and steadily from that time to this, until now it is nearing the point where we expect the riches of the shallow levels will have developed to a much richer and steeper run of ore ground, and from which good dividends will shortly be extracted. We are already informed by last week's report that both lead and blende have been cut into in the lower levels, and it is only a question of a few days to ascertain the actual value of each. There is no doubt about it that anyone availing themselves of the present price of these shares will be able to congratulate themselves upon the possession of them long before this year has expired. One great point is possessed by Glenroy, which we rarely find in the many satellites which are always to be found springing up around our valuable mines—the possession within itself, as shown in the shallow levels, of rich strong lodes, and the work which has been going on in the way of sinking the shaft and driving out levels will only augment the riches of the mine by opening out upon the lodes already discovered in a more valuable condition—so that as a progressive mine

cover, and confidence be inspired by a few real *bona fide* discoveries, and then let capitalists be met in a liberal spirit, then the district will again repeat its history, and once more establish its lead-producing qualities; and where can now be only seen the empty offices, engine-houses, &c., there will again appear the former life and activity. It is simply a matter of time, and I am not afraid that that time will be prolonged consequent to any remarks your Correspondent may make.—*Nant, Llanarmon, Feb. 26.* J. A. EDE.

SIR,—The change in the prospects of mining, in consequence of the improved prices for metals, has been so rapid that all the mining labour Cornwall produces is likely to be called into active exercise. Profitless undertakings have become profitable, and new ones are springing into existence very rapidly, so that instead of there being a lack of work for miners there appears every indication that there will be a scarcity of able miners for the work. No one could have predicted this great change a few months ago, and while the ponderous clouds of adversity have been succeeded by sunshine generally, yet to no section of the community interested in mining in Cornwall has the sunshine been more needed and welcome than to the working miners. Of late there has been next to no demand for his labour at home, and the consequence has been extreme privation. He is, however, likely to be compensated for this by a demand beyond his means of supply, and instead of working for 20s., 25s., and 30s. per month he will be able to earn a reasonable living, and his employer be able to give it. Of late the Cornish miner has been compelled to seek his living in foreign climes; it is to be hoped, however, that the time may be far distant that will again drive him from his native land for that purpose.

MINE ADVENTURER.

Sir,—I quite agree with "A permanent Shareholder" that Glenroy
 Lead shares are very cheap at current prices. Since he drew attention
 to them in last Saturday's Journal they have moved up a little,
 but even now they are quoted below 40s.—at a discount of over 50 per
 cent. Of course these are nominal quotations, and it would be
 impossible to execute an order of some importance without at once
 pushing them to 3*l*. or 4*l*. As a matter of fact, large orders to buy
 Glenroy shares exist, principally for the provinces, but those orders
 cannot be carried out as there are no sellers at present prices. Nor
 is this to be wondered at. No large holder of Glenroy in his senses
 would care to sell out at such quotations as 35*s*. or 40*s*. when pro-
 spects are such that double and treble those prices may be seen any
 time. It should be borne in mind that this is not a Cost-book mine,
 but a limited company. The 4*l*. shares in circulation are fully paid,
 and, therefore, free from any further liability. With "A permanent
 Shareholder" I am at a loss to understand why they should be at a
 discount at all. The company is in full working order, sells lead and
 blende in increasing quantities, and has no debts, but on the con-
 trary an available unexpended capital of over 5000*l*. The mine is
 rapidly improving as greater depth is attained, and there cannot be
 a reasonable doubt but a valuable discovery will be made as soon as
 the depth of the adjoining Great Laxey Mine (the 4*l*. shares of which
 are at 20*l*.) is reached, that is to say after 20 to 30 fms. further sink-
 ing. Taking all this into consideration, and bearing in mind the fact
 that lead has improved last year from 13*l*. to 19*l*., with every pro-
 spect of a further rise, it is puzzling to find that Glenroy is not at a
 premium, but actually at more than 50 per cent. discount. Such are
 the anomalies of the market. But they cannot last for ever, and as
 "A permanent Shareholder" rightly observes, the turn of Glenroy
 must come by-and-by. In my opinion a rapid and important rise is
 inevitable.

MONA.

SIR,—Since writing my letter of Dec. 10, signed "One who Knows," which was published in the Journal of Dec. 13, I have been shown reports from Messrs. R. Symons, J. H. Collins, W. Tregay, and John Mufford, who agree in pronouncing the discovery a very valuable one, My information came to me from a source which I at the time considered a reliable one, but in the face of the reports of the gentlemen referred to I can only arrive at the conclusion that the trials of the ore mentioned in my letter were incorrect, and I have, therefore, no hesitation in expressing my regret that I should have given them publicity, and I willingly apologise to the parties concerned for any inconvenience that may have been caused to them.

George-street, Plymouth, Feb. 25. J. FLETCHER PAGEN.

SIR,—My attention has been called to some unintentional errors in my letter under the above heading inserted in last Saturday's Journal. In order to be thoroughly informed as to the limits of the property and the lodes traversing it I visited it to-day, and in next week's Journal I should like to have inserted a letter which I will send you on Wednesday next giving every particular as to the lodes, boundaries, character, &c.—*Truro, Feb. 26.*

R. SYMONS.

Sn.—My attendance yesterday at Polrose Mine, in Breage, revived the memories of my juvenile days, when my late father, some members of his family, and a few of his neighbours worked this mine for a brief period. I remember that, in a short time after the erection of a small steam-engine, which was purchased at Trevenen Mine, in Wendron, the company sent to the smelting-house (Trevoweth) 300*l.* worth of tin. But the work was abandoned in 1817 because some of the adventurers could not pay their quotas of the cost. I always held a good opinion of the mine; about 15 years ago I applied for a grant to work it, but the lord's agent requisition of 100*l.* per annum minimum rent put the subject from me. I found on the mine to-day a pumping-engine of 40-inch cylinder, a stamping-engine 31 in. with 60 stamp-heads attached, a winding-engine (16 in.), a calciner, dry, smithy, carpentry, a very shabby account-house, a large number of frames, buddles, &c., all in good condition. The mine was suspended, like many others, on account of the low price of tin two or three years ago, but the pumping was resumed about three weeks ago, and the water is nearly all discharged. A few men are at work, and many more will be quickly set on. The sett contains about 10 lodes, and the prospects are fair. I observed from the plan of the levels that the drifts are very short; extension of them on the lodes westward is advisable. There is a considerable length of ground on their course to be explored, and expedition will, no doubt, be observed in that pursuit. The chief agent, recently appointed, is Captain Wm. Bennetts, a man of long experience in mine agency and judicious in all his steps. A better agent, I suppose, is not to be found every day. The other agent is Captain Roach, well qualified for his post. The local purser is Mr. W. H. Watson, and the secretary Mr. John Watson, London; the lord of the land, Lord Churston. The sett embraces the whole of Spernon estate. The adit is 12 fms. deep, and the depth below 80 fms. R. SYMONS.

Truro, Feb. 25.

Sir,—Amongst the mines now being set to work no one, in my opinion, presents better prospects of successful results than Carn Camborne, in the parish of Camborne. A meeting of the promoters and some of their friends was held on the mine yesterday, when, after the business they had to transact was discharged, they dined together in the account-house. Afterwards some very interesting speeches were made by Mr. Gregory (Chairman), the solicitor, Mr. Endeau, Capt. R. Pryor, Mr. F. Michell, Capt. White, Capt. J. Michell, and others, having special reference to the character of the mine. They very properly described the mine as being in a first-class position, being surrounded on all sides by mines which have yielded immense profits. On the north there are Stray Park and Dolcoath Mines. I was informed many years ago that Stray Park yielded 300,000*l.* in dividends. The cross-course by which the rich deposits of copper ore were deposited in that mine passes through the centre of Carn Camborne, where like results may be anticipated. In the Cornwall railway train a few days ago I sat opposite a gentleman who stated that it had been ascertained from statistics that Dolcoath, from the commencement of its operations till now, had yielded six millions sterling in ores, and that the profit out of that amount was about two millions. How far that gentleman was correct I cannot say; but we know that it has been and is now a wonderfully productive mine. At the south stands Condurrow, which gave large profits; and further south there is South Condurrow, which at the present time is yielding large profits. At the eastward are Tincroft, East Pool, and Carn Brea—all rich mines, and several others which have been rich.

There are four lodes in the sett—three of copper, and one of tin. One copper and one tin lode (the only two wrought on) are very large and productive, operations on which were relinquished about three years ago in consequence of the depressed prices. At present prices the contents of the lodes will unquestionably give good pro-

STR.—Over a quarter of a century ago, at the opening of West Chiverton, it was immediately surrounded by a host of bubble Chivertons—Chiverton Higher and Chiverton Lower, Chiverton Vale and Chiverton Dale, Chiverton East and Chiverton West, Chiverton North and Chiverton South, Chiverton this and Chiverton that—they were no fewer than fourteen in number; they were, however, very short-lived—like Jonah's gourd, they sprang up and withered in a night. The only surviving one is Chiverton East, which, like its compeers, has never—that I have heard—produced lead enough to make a spoon. At the cutting of a bit of ore at Wheal Crebor there at once sprang into existence a whole family of Crebors, which in all probability will be just as ephemeral as the family of Chivertons.

STR.—Capt. Jewell in his letter inserted in last week's Journal is right in saying he erected only part of the expensive machinery at this mine, but I still contend that it would have been wiser if Capt. Morcom or Capt. Jewell, his successor, had advised and urged the suspension of surface operations, and prosecuted the driving of the deep adit level. Capt. Jewell himself expended more than double the amount required to complete this deep adit by which the mine would have been fully proved at a good depth.

SIR.—It shows a healthy tone for mining in Cardiganshire that your correspondent Capt. Absalom Francis gives us a little gratuitous information respecting the above mines. There is no doubt but that business men have had their attention called to the profits which can be made by the investing public by taking an interest in sound undertakings which will bear strict inspection. Your Journal has contained very able letters having reference to various properties, amongst which I have noticed with pleasure the name of these mines, and it is satisfactory to find that it is the accepted opinion of your correspondent that they "will get into a state of returns." Of course it is fully understood that these mines, along with others, have been stopped through the unprecedented severity of the weather, but in spite of this the water has been kept out of the lower levels. The sinking and driving, I am informed, are going on vigorously, and in a few weeks the mines will be fully equipped for large and important returns of ore. It may not be amiss for those unacquainted with his property to state that each separate department has its own machinery. For example—for pumping purposes for the drainage of the mine there is a new 50 by 4-ft. breast-wheel with its accessories; for drawing a 40 by 5-ft. breast-wheel, attached to which there is a drawing-machine 6 by 6 ft. drum, with 240 fms. steel wire-rope, second to none in the county; for dressing purposes a 40-ft. wheel for work the dressing machinery and stonebreaker, as also another wheel for dressing purposes, with plunger, &c. In fact, if the investing public would only visit this property and see for themselves what a very large amount has been expended upon it, with the mineral on surface, and the enormous heaps of ore left in the dumps by the former extravagant workers, who were only able to dress the ore by the most primitive means, casting riches to one side, and even not returning a ton of blende, of which there are thousands of tons on the mine, I am convinced that they would not hesitate to embark in an enterprise which at the present moment affords an opportunity at less than half its legitimate value.—*London, Feb. 27.* INVESTIGATOR.

SIR,—I was sorry to notice the deprecatory remarks made by your North Wales Correspondent in connection with this district in last week's Journal. They are not fair, though his views are in the main correct. They are so couched as to imply that this district, as a mining centre, is too small, poor, and dwarfed to withstand the strain attending the numerous ramifications of mining in general as applicable to other districts, which is not correct, but rather that there is hardly another district in the two counties that offers such an inexhaustive field for successful and legitimate mining as this. Small purchase-money, economical management, and absence of stock jobbing to a certain extent, are essential properties to successful mining in all parts of the world these days; and the conclusions he deduces from the recent references to the Llanarmon district are not the particular property of any one place more than another, but are common to all districts. He mentions the eastern zone as being the one to which most attention should be directed. A casual observer would naturally come to this conclusion; but when our friend comes round this way again, if he will just walk as far he will find the zone he mentions as underlying the flats has been worked, while the western, for about $\frac{3}{4}$ mile in length, remains in its primeval state. There is hardly a doubt but that the driving of Nant Adda level would be the making of the district, by opening out mines that have been proverbial for the prolific deposits of ore, and which have only been partially developed. I am given to understand that the bottom of the Nant Mine was the best part of the mine when it stopped, and in a "true fissure vein" of this character, rich at the bottom, and a considerable distance from any disturbing element, it is difficult to limit its resources. The ore was more regular and continuous in this zone than the eastern. It is stated that over 1,000,000l. worth of lead ore was extracted from the lode while crossing a small field 50 ft. on the course of the lode.

For my own part, I believe this district holds out such strong inducements to capitalists that no puffing is necessary. Let things re-

SIR,—The Westminster Mines have been among the richest and most productive in Wales, and acquired during their working a widespread celebrity for the remarkable yield of lead ore from only partial developments, and will, with the considerable addition of maiden ground adjoining, constitute a field for mining enterprise as extensive and important as any in Flintshire and Denbighshire. The most favourable geological features have been proved beyond the possibility of a doubt to contain in a state of perfection all the requisite conditions for the production of immense quantities of lead ore, which can be sent to market at a good profit, so that investors will here find ample scope for the employment of capital, and in such a manner as will prove highly remunerative.

SIR,—My attention has been called to a letter in last week's Journal headed "Parys Copper Association of Anglesea," and signed by "Looker-On." The writer is so entirely ignorant of the matter he attempts to treat that I am sceptical enough to doubt his statement that he is a shareholder in this company; for surely the business ability necessary in a person who has "for many years superintended large public works" would have suggested the advisability of ascertaining something about the undertaking in which he purposed to embark.

In the first place, he regrets that no tunnel has been "driven into the heart of the mountain to develop the treasures supposed to be there." This, in conjunction with his remark that only "a few miners work weekly at the mine with pick and shovel," would seem to convey an impression on his part that the sett is a virgin piece of ground. An answer to this is hardly necessary, as anyone taking the least interest in the undertaking knows that the mines have been worked for a period which may roughly be stated as more than a hundred years; that dozens of shafts have been sunk, and many miles of levels driven, to explore and open up the sett. If by the expression "a tunnel" he means a level, a cross-cut, or an adit, I would recommend him (if he has the interests of the shareholders at heart) to study a working plan of the property; and if his experience would then allow him to suggest where or in what direction the tunnel should be driven, it might possibly be of some practical use. I would also draw his attention to the fact that we are, and have been for many years, driving an exploratory tunnel or cross-cut 90 fms. below adit, with the hope of cutting "an enormous deposit of copper ore," though whether it is the same as that to which he refers I cannot venture an opinion.

The statement that ten times the number of men should be employed in our works is rather suggestive of a superintendent of public works who looks to others for the funds such a course would squander, whereas the recommendation that the directors and secretary should reside at or near the mines is about as reasonable as saying the London representatives of the Bank of New Zealand should reside at Wellington. The question whether or not it is advisable to employ rock-boring machinery has received for some little time and is still receiving the anxious consideration of the directors and local manager, but their decision is subject to difficulties which I cannot enter into here, and as the next meeting of shareholders (of which there are two in the year) will be held early in March, I will not add more, as I hope that any shareholder will then ask for any information he may require, and make any practical suggestions that may occur to him. I can assure him that they will meet with the attention both of the directors and of

F. F. WILSON, Secretary.

SIR,—I was quite pleased to read the letter of "Looker-On" in last week's Journal, and hope it may have the effect of rousing the directors of the above mine to activity. It is really surprising that more vigorous efforts have not been made to explore the hidden wealth supposed to exist in the mountain, and that it has not been tunnelled for that purpose long ago. I quite agree with the writer that the management ought to reside near the mine, and that the present pottering system should be superseded by more vigorous efforts. Would it not be a good time to dispose of the halvans now?

Feb. 26. A SHAREHOLDER.

SIR,—I have read with much interest the reports and correspondence which are published in the Journal from time to time respecting this company, and have also been very gratified with the more recent reports, but the letter of a "Looker-On" in last Saturday's issue should demand from the shareholders their serious consideration. I am not quite prepared to endorse that part of "Looker-On's" letter wherein he advocates the necessity of the secretary and directors living near the mines, as I think that might be found to be impracticable, but I do think that the agent there should have full power and authority to push forward the work with all speed; I believe there is a good balance in hand, besides a large quantity of unallotted shares, and I think all available means should be brought to bear to get at the large deposit of ore known to exist in the mountain. If rock-boring machinery and more strength are required the agent ought to be empowered to employ it. From what I have heard of his reports he still (as he always had) has but one opinion—that there is a large deposit there, and in all justice to him he should be enabled to try at all events to get at it in a more vigorous way than at present.

Oxford, Feb. 24. SHAREHOLDER.

SIR,—I read with some interest the remarks of "Looker-On" in last week's Journal respecting the above company. It is to be hoped that now copper has risen in price the mine will be worked to its full extent; this should not only be done by hand labour but also by boring machinery, so as to develop its riches with quickness and economy. It has been stated, I believe, that 200 tons can be returned monthly from reserves alone. Let me urge upon our directors to take this matter of boring machinery into their serious consideration, and, if possible, employ it without delay. From most accounts we glean there is treasure in vast quantities supposed to be in the mine. It should be the wish and aim of the directors to push operations on as speedily as possible, so that larger returns may be made, and good profits given to all concerned.

A SHAREHOLDER.

SIR,—So far this mine has been a great disappointment to many; but a short time since we were led to think the tide had turned, inasmuch as it was stated in the Journal that all the forfeited shares had been taken up, and the future calls, if any, would be very light; but to my surprise, at the last meeting held at Truro on the 13th inst. a call to the tune of 12s. 6d. per share was made on 6000 shares, whereas at the meeting twelve months ago a call of 5s. per 3736th share was considered sufficient. At that date the agent's report finished by saying, "in a very short time we shall have a profitable mine." Unfortunately for the shareholders this long-looked-for time has not yet come, I would, therefore, suggest that the mine be inspected by an independent man, and also steps taken to exercise all the economy possible, as I notice we have two agents and a purser—the latter getting eight guineas per month, which seems to me to be a large sum for the small services rendered. It will be remembered the late Capt. Gooch, at the time the purser's salary was raised, very

nobly declined to have his salary also raised until the mine was able to pay it. We want a few more such men.

A SHAREHOLDER.

A MINING EXCHANGE.

SIR,—Why should we not have a Mining Exchange? With the large amount of business being transacted in all kinds of mining securities it seems much to be regretted that we have not some place where we can meet without playing the part of obstructionists in Throgmorton-street. I am aware that attempts have been made from time to time to obtain such a desideratum, but whether from want of funds or whatever reason they have fallen through I do not know. Independent of the London sharedealers, numbering, perhaps, 30 or 40, there are at least half as many locally who would, I have no doubt, be glad to have some place where they could meet their many mining friends. An annual subscription of 10l. 10s. for London members and 5l. 5s. for local members would ensure a select community, and the adoption of rules and regulations based upon those of the Stock Exchange would, I would venture to say, not only meet with the approval of our numerous clients, but tend to give confidence in the execution of their commissions. T. B. LAWS.

London, Feb. 27.

THE BUILDING TRADES.

SIR,—It is generally admitted that a decided improvement has taken place in almost every branch of trade, but as yet little or no improvement has been felt in the building trades of the country. So many of the mineral products of this country are dependent upon the consumption of them in the building of houses and in large works that a great improvement may shortly be expected in the sale price of several articles of mineral produce. Amongst them may be included lead and copper, brass and iron castings, slate, bricks, lime, granite, freestone, and marble. All these articles of produce must be in better demand, and a rise may be expected in all of them.

J. T.

[For remainder of Meetings, see to-day's Journal.]

Meetings of Public Companies.

MWYNDY IRON ORE COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Louthbury, on Wednesday, Mr. ALEXANDER BROGDEN, M.P., in the chair.

Mr. A. THOMSON (the secretary) read the notice convening the meeting. The report and accounts were taken as read.

The CHAIRMAN said he could not but congratulate the shareholders on having, about 18 months ago, taken the advice which the directors tendered to them. It would be remembered that in June of the year before last the directors advised the shareholders to extend the borrowing powers of the company, and to raise what was necessary to carry on the company, and to enable them to hold the stocks which were then accumulating, by the issue of debentures. It was at the time considered almost impossible to get the debentures subscribed, and but for the high rate of interest which the directors agreed to pay—7 per cent.—and for the great exertions used by the directors, probably the spirit of anxiety which then prevailed would have prevented the issue of debentures. However, the directors succeeded in issuing 15,000l. of the debentures, which for the moment answered all the purposes required, and they had since, fortunately, fallen on better times. They had redeemed 5000l. of these debentures, and left the amount now only 10,000l., part of which were due in 1881 and part in 1883. With reference to these debentures the directors would be glad to redeem the remaining portion if they could induce the debenture holders to accept payment at the present time. Fortunately they would be in a position to accumulate a reserve fund, which would enable them to pay off a considerable amount of the debentures, and there need not be any anxiety with regard to them. The balance that would remain after the payment of the dividend proposed, and the amount which would be recovered from the Llynvi Tondy and Ogmore Company, as compared with the amount previously set aside to cover that loss, would leave them 2872l. cash available, and they had stocks of ore which, at a moderate valuation, were worth 4794l. and 599l.; so that they had altogether something like 8000l. in reserve to meet the debentures, besides the plant and the other properties of the company. The only anxiety was to get the debenture holders to accept the money before the due time. (Hear, hear.) The improvement in the iron trade, which was now very marked and perfectly well known, commenced only at the latter end of last year, and up to Dec. 31 (the date to which the accounts presented referred) the company derived very little benefit from the rise in prices. They had to look rather to the future for gains; but it must not be supposed that all the iron raised was disposed of at the present rates, because the company had to fulfil its contracts entered into before the improvement had set in. Mr. Mackay and himself visited the property some time ago, and he could say from personal observation that there was every reason to be confident in its value. The Mwyndy and Llynvi-saer properties, which might be taken together, contained large deposits of ore, which the directors refrained from working during the time of depression, and they required a little time to restore them into a workable condition; but there could be no doubt as to the reserves of ore there, and that the property could be almost immediately available for increasing the returns. Levels were being driven into the Llynvi-saer Mine from the Mwyndy side, and in the present year they would be able to raise a considerable quantity of ore from this property. With reference to Treacastle he was bound to say that they could not look for any increase in the output there for some time to come; but if they could maintain the present quantities they would have every reason to be perfectly satisfied. They had had long and expensive explorations on the western side of the mine, and they were now driving the levels towards the shaft, which had been sunk as deep as it could be until the water was taken away by the levels. They had made boreholes, which had discovered considerable quantities of ore, but the boreholes had not yet been reached. With reference to the Llynvi, Tondy, and Ogmore Company's scheme, that had been approved by the Court of Chancery, and under this scheme this company would receive 5s. in 1l. in cash and 5s. in 7 per cent. preference shares of the new company, fully paid up. Speaking individually, he thought it was much to be regretted that the action of some of the debenture holders had forced the finishing of the liquidation, for he believed that if the liquidation had been carried on a little longer 20s. in 1l. would have been paid. However, as the proposition was accepted unanimously by all the unsecured creditors, the directors had no other course but to adopt it. During the year they had the pleasure of seeing back on the board Mr. Fletcher, who had returned to this country in his usual vigorous health, and again capable of looking after the undertakings with which he was connected. Mr. Mackay had been a most valuable and effective member of the board, and though he retired in favour of Mr. Fletcher the company would still have the advantage of his supervision of the affairs of the company as they passed through these offices. With respect to the accounts, they showed that the expenditure on the Mwyndy property in the year had amounted to 13,234l., as against 17,422l. in 1879, showing a diminution of 4698l., a large portion of which arose from the reduction in the wages and cost of raising the ore and the cost of the machinery. On the Llynvi, Tondy, and Ogmore side the receipts for the year were 13,194l., as compared with 16,348l. in 1879, or a diminution of 3150l., the net diminution in costs thus being reduced to 1500l. With regard to the Treacastle property, the accounts of which had always been kept separately, the expenditure for the last six months of the year had been 3682l., as against 2632l. in the corresponding period of 1879, or an increase of 1050l., while the receipts were 5032l., compared with 4046l., or a net increase of 986l. In the expenditure at Treacastle the large cost of driving some of the levels was included, as well as the sinking of the shaft, which alone in the half-year amounted to 582l. The directors had considered the accounts with the greatest care, and they were in every direction. Having invited comment and enquiry, he (the Chairman) moved the adoption of the report and accounts.

Mr. CHARLES REYNOLDS seconded the motion.

Mr. JOHN TAYLOR, in reply to Mr. GILL, said the company had 17 horses, having recently increased the number, and the cost of keeping them was less than in any similar concern of which he had any knowledge.

Mr. FLETCHER remarked that it was impossible for the company to go on without making fresh contracts, but many of the contracts at the lowest prices had run off since the closing of the accounts.

Mr. G. W. BIXBY expressed his perfect satisfaction at the manner in which the directors had carried on the company throughout the difficult times. He noticed, however, that the sales of ore from the Treacastle Mine had fallen off in October, November, and December, and he wished to ask if this falling-off was expected to continue?—The CHAIRMAN thought they would be scarcely able to maintain last year's return at Treacastle until the shaft was sunk deeper and the levels were driven further.

Mr. FLETCHER added that the raisings for Treacastle in January were 1832 tons, and the deliveries 1918 tons, which was in excess of the usual returns.

Mr. J. TAYLOR said the company had good fortune in the early works at Treacastle, where an excellent shaft was sunk, and powerful machinery had been erected. They had bored in eleven places, and more or less ore had been discovered by nine of the borings. He thought it extremely probable that they had a valuable mine there. The ore was unquestionably of very good quality, and was much liked by the iron smelters. The other properties were looking very well, and the agents spoke with the greatest confidence of their being gradually able to increase the quantities of ore raised. The company had lately, at his recommendation, adopted boring machinery. As a rule, the mines never looked better, nor the machinery in a more efficient condition, than at the present time. During the existence of the company they had raised just about 1,000,000 tons of ore, the sale of which had realised for the company a profit of 158,874l., and they had still their property, the value of which could not be assessed. It was a freehold property, with the exception of some small portions at a very moderate royalty.

The report and accounts were then unanimously adopted.

On the motion of the CHAIRMAN, seconded by Mr. REYNOLDS, a dividend of 2s. per share, payable free of income tax, on and after Feb. 25, was declared.

The CHAIRMAN moved the re-election of Mr. Robert Fletcher as a director.

Mr. J. FRY seconded the proposition, which was adopted; and, on the motion

of the CHAIRMAN, seconded by Capt. PELL, R.N., Mr. Charles Reynolds was re-elected a director. Mr. Scott, the auditor, was re-appointed.

The meeting closed with a vote of thanks to the Chairman and directors.

PHOSPHOR-BRONZE COMPANY.

The sixth annual meeting of this company was held at the City Terminus Hotel, Cannon-street, on Friday, Feb. 20, Mr. JAMES ROCK, J.P., in the chair.

The notice calling the meeting, and the minutes of the last meeting, having been read by the SECRETARY (Mr. E. Lagerwall), the report of the directors previously circulated amongst the shareholders was taken as read.

The CHAIRMAN said that he had a few words to say in reference to the present position and future prospects of the undertaking. In the first place, he must say that, from the small attendance of shareholders, they appeared tolerably well satisfied with the state of the company's affairs. Whilst expressing the pleasure he felt at meeting the shareholders, he had at the same time to regret the absence of one of the directors, Admiral Sir Edmund Commerell, who had official duties to attend to. With regard to the report, he thought that he might fairly say, and that they would all agree, that it was a satisfactory one. They were now in the seventh year of the existence of the company, and the present was the sixth annual report; for the first year, however, they did not begin to work before the beginning of May. In the report for the first whole year's working in 1875 he found, on looking back, the remark was made that, notwithstanding the general depression of the metal trade, the course of the company's business had been prosperous, and the same remark, slightly varied, had appeared in every report since, for, notwithstanding the great dulness of the metal trade, the position of the company had improved from year to year, and he was glad to say that their prospects were brighter than they had ever been yet. In 1878 it will be remembered that the Government voted a large sum for war expenses, and no inconsiderable amount of orders on that account came to the company for metal. It was consequently felt that the last year's earnings might show a falling off; but, fortunately, this was counterbalanced by the augmentation in other orders arising from the improved condition of the metal trade during the autumn. It appeared from a statement, furnished to him by the secretary, that since the first year's trading of the company the sales had increased 515 per cent., and the order which in 1874 numbered 52, were 260 last year. During all that time the capital ranking for dividend had increased, and they had been enabled to maintain a uniform dividend of 10 per cent., which, he thought, was most satisfactory in the dull times through which they had passed, and he felt very gratified to call the attention of the shareholders to that fact. Beyond this there was a point which, however, might not have much weight in the City of London, which was that the company had by its metal encouraged the progress of industrial art; and, where many inventions had failed, they had become successful and profitable by the use of the company's metal. He was pleased to mention that fact, though, as he before stated, it might not have much weight in the City, where substantial dividends were more regarded as an evidence of success than anything else. The customers of the company now numbered little short of 1000, consisting of corporations and firms; and, what was of considerably greater consequence, was that the order sheets increased in length, both as regarded the amount and the value of the orders, and what was still more gratifying was that as well as getting new customers they retained their old customers, showing that they were well satisfied with the company's manufactures. They continued to receive orders from the Government, and from Sir W. G. Armstrong, the eminent artillery engineer, as well as from the Midland and other railway companies for the metal, whilst there was a considerable increase in the export trade, the company's metal becoming known in all parts of the world. They were receiving orders from the British and Dutch East Indies, Australia, China, and Japan. The heavy castings for steamships, which was an important part of the business of the company, was found to answer most satisfactorily, the bearings had been working in a mail steamer twenty-seven months, wearing only one-sixteenth of an inch, and not having had to be interfered with by the engineer. They had for the first time in the past year, the company's metal was the most difficult thing to carry out; they did not want to commit themselves to the expenditure of capital in the erection of mills, as they did not think they were justified in taking such a risk. The difficulty then forced itself upon the board of finding parties possessed of mills capable of working profitably, and he was happy to say that they had at last succeeded, and if the arranged terms should continue they would get a large and profitable addition to that branch of the trade. With regard to the rods which were rolled and drawn by the company, they had been tested by the Government, and they were getting in orders for them. The company's order since the beginning of the current year largely exceeded those secured at the same time last year. He hoped the progress and prosperity of the company would continue, and that the directors at the next meeting would have a still better report to present to the shareholders. In conclusion, he begged to move that the report and accounts be read and adopted, and that the dividend at the rate of 10 per cent. per annum, free of income tax, recommended therein, be declared.

Mr. PETER, in seconding the adoption of the report, said that he thought the shareholders might naturally congratulate each other on the present position and future prospects of the company's affairs. He thought that it was a great matter for congratulation that the business had now been concentrated under one roof, which he considered would be of great advantage to the company. He had no fault whatever to find with the balance-sheet, which was gratifying in every respect. The CHAIRMAN said that he should have mentioned that they had secured premises comprising offices and workshops of the most desirable description in Summer-street, Southwark, and but for their being in course of erecting furnaces, &c., at the present time, the directors would have held the meeting there. He, however, invited the shareholders to visit them, and he was sure they would be well satisfied.

The CHAIRMAN and SECRETARY having satisfactorily explained certain matters of account,

In reply to questions, the CHAIRMAN stated that the question of securing a quotation for the shares on the Stock Exchange had been under consideration, and he knew of no difficulty in the way of obtaining one. The most important patents held by the company for $\frac{1}{2}$ years' run, but which expired at the end of the year, were such moderate prices for this metal that he believed the company would have a very good business at their command when the patents no longer existed. The resolution was then unanimously agreed to.

The retiring director, Mr. J. W. Bushby, was re-elected, as were also Mr. R. Payne and Mr. E. Peters, the retiring auditors.

A cordial vote of thanks to the chairman, directors, and secretary closed the proceedings.

MID-DEVON COPPER MINING COMPANY.

The ordinary general meeting of shareholders was held at the offices of the company, Royal Exchange Buildings, on Thursday, Mr. JAMES WILSON, the Chairman, presiding.

Mr. FRANCIS R. REEVES (the secretary) read the notice calling the meeting. The report of the directors, which was taken as read, was as follows:—

The directors have the satisfaction to announce that after numerous disappointments the Belstone Mine has at length been cleared of water. It has been decided to sink both the main and the cross-shafts at once, the former to a depth of 110 fms. and the latter to be intersected by the main shaft. The main shaft will be driven north and south at 100 fms. to cut the lodes at this point. The sinking of the inclined shaft from the 50 to the 80 fms. will be all in the lode, and besides ventilating the workings at the 80 fms. level will doubtless lead to good discoveries. During the past few weeks the workings in the lode at the 80 fms. level have been commenced, and are now being pushed forward in all directions with the greatest possible energy. The appearance of the lode at this depth has since greatly improved; it is yielding good quantities of rich ore, and giving great promise of larger discoveries as the lode is laid open. A cross-cutting was being driven to intersect the No. 2 shaft at the 80 fms. level, and some fine branches and deposits of ore are being met with in the cross-course. The machinery is now working well, and the directors are considering the advisability of using rock-drills to expedite the development of the mine. Since the closing of the accounts for the past year satisfactory arrangements have been made for placing the whole of the remaining shares. The mine may now be said to be fairly started, and there appears every reason for congratulating the shareholders on the excellent prospect before them. The directors have no doubt whatever of the richness of the lode, and are anxious to realise as early as possible the permanent success. The audited statement of accounts to Dec. 31 accompanies this report. In accordance with the Articles of Association Messrs. John Gould and William Hall retire from the board of directors, but being eligible offer themselves for re-election. The auditor, Mr. H. C. WISS, also offers himself for re-election.

The CHAIRMAN formally moved the adoption of the report and accounts, which was seconded by Mr. W. HALL, and carried.

On the motion of the CHAIRMAN, seconded by Mr. W. MARTINEAU, Mr. J. Gould and Mr. William Hall were re-appointed.

Mr. H. C. WISS was re-appointed auditor.

The CHAIRMAN said he had not much to add to what was stated in the report, but what he had to say was of a pleasant nature. They had made some good discoveries at the 80 fms. level, the machinery was working exceedingly well, and the mine was dry on all points, the inclined shaft had been sunk about 5 ft. during the last week, greater quantities of ore had been raised than had been for some time, and the cross-cut to the north lode is improving daily. The shares had all been taken up in the new company, and there was ample capital to carry out the whole of the undertaking, which the directors were determined to pursue with the greatest energy possible. During the last week the mine had been visited by a well-known and experienced mining captain—Capt. Phillips—who had sent in an independent report to the board, which had been received with great satisfaction. The report was very extensive, having dealt with the mine and its future workings and prospects. He would ask Mr. Reeves to read the report of Captain Phillips.

Mr. REEVES read the report, which was as follows:—

Feb. 25.—Agreeably with your request to inspect and report upon this mine I remark that it being my first visit it has been attended with considerable pleasure, as since witnessing some of the earliest samplings of the ores at Morwellham Quay I have felt great interest in the gradual development of your main lode, which in many of its characteristics is without a parallel, at least in this country. The deposition of the ores in the main lode is in some respects analogous to that of the famed Van Lead Mine, recently so ably described by Dr. Foster, although you have yet to find the ore in large masses, which you have every reason to expect. The set is very extensive, having great natural facilities for deep adits. The supply of water for the machinery and dressing purposes is ample, and the royalty unusually favourable. The mine is well supplied

with very powerful machinery for extensive development, the only part on which I have some doubt, is the strength of the flat-rods at surface, their size and strength should consider inefficient for the strain of another deep lift. The whole of the pitwork appears to be well and practically arranged, and a substantial change, and in excellent working order. A very great advantage, thereby relieving the ing up the deep adit to take off the water at the 40, and thereby relieving the machinery of its burden at this depth, and by this means the pitwork above the 40 would become serviceable for deeper sinking or any other purpose. The advantage would give great ventilation, and would also prove the lode along its course, communication could eventually be made from it to deeper levels, its course, intersected at different points; at the 40 and 50 good deposits of ore were found, and from the indications of the lode at the different intersections I consider you cut now being put out at the 80.—Main Lode: The very great width of this lode (100 ft.), without as yet any sign of what is termed a horse to mark it of this lode of two lodes, is something altogether unusual. On the Continent there are lodes of greater width than this from wall to wall; but they are marked by certain divisions, which lead to the inference that they are distinct lodes by position. It is my conviction that a division of this kind will shortly be found, or, probably a contraction of the lode may take place. It is not an uncommon thing for lodes of great width to very suddenly contract, and I have no doubt when this takes place the ore will be more concentrated, and the lode be found very productive.

The lode is of such enormous size, and the indications presented by its present development are of such a character, as to justify the greatest expectations from its deeper prosecution. Your agents accompanied me underground, and kindly offered every facility for examining the whole of the workings, and the mine, and I have pleasure in expressing my opinion that the lodes hitherto have been worked and proved in a very minierlike manner. The returns of rich ore recently made warrant the existence of vast resources of ore at a greater depth. The recent discovery of ore near the north wall of the lode, 25 fms. from shaft, the 80, is I consider a precursor of what may be expected any day. I cannot, however, but observe that the ore was of very good quality, and the lode presented a very fine appearance. In another point in an eastern drive at the 80 to describe the various characteristics of this lode minutely, I should have to go beyond the limit of an ordinary report. My opinion of the mine after careful inspection and great consideration is such as induces me to advise further and proposed of sinking the shafts and prosecuting the different levels, as suggested by the agents on the mine. In conclusion, I would observe that, as far as I am concerned, concur in my opinion regarding this property, and also with whom I come in interest its gradual development, being fully persuaded that it will eventually become very remunerative.—WM. PHILLIPS, Manager of Walkham Valley, and late of Bedford United Mines, Tavistock.

The CHAIRMAN said the report must be considered very satisfactory, as it confirmed all that had been said by Capt. Richards, who had expressed his opinion that they had here a more wonderful mine than Devon Great Consols; but, of course, the ore could not be found on the surface, and they must sink to get it. As to the value of the ore, they had sold some at the highest price in the market, so it was not as if they were searching for something which would not be of any value when found. The only thing was to get a quantity; they knew the quantity was exceedingly valuable, and to show the value the directors had upon it might mention that out of a total of 45,000 shares the directors held about 20,000 (Hear, hear.) There had been a great rise in the price of shares lately in the market, but the directors had nothing to do with that, and they have not sold a single share. There was an item in the accounts to which he would refer—directors' fees, which due for 1878 and 1879, which was carried into the other side. The directors had never touched a penny of that, and did not intend to touch it until the mine was in a dividend-paying condition. The directors managed the affairs merely looking to the future for their remuneration, because the success of the company would be a great benefit to themselves as shareholders. He sincerely hoped that at the next meeting the directors would be able to present a still more favourable report of the position and prospects of the company. (Hear, hear.) A vote of thanks to the Chairman and directors closed the proceedings.

SOUTH PENSTRUTHAL MINING COMPANY.

A general meeting of shareholders was held at the offices of the company, Cornhill, on Wednesday, Mr. JAMES PETRIE in the chair. Mr. E. ASHMEAD (the secretary) read the notice convening the meeting.

The CHAIRMAN said the meeting was convened, as the shareholders were aware, for forming the South Penstruthal Mine into a Cost-book Mining Company, and he would, therefore, ask Mr. Ashmead to read the opening of the Cost-book and the rules of the company.

Mr. ASHMEAD read the opening of the Cost-book, and the rules, which stated that Messrs. H. Waddington and Granville Sharp were to be trustees for the company; that a call of 10s. per share be made on each of the 5000 shares applied for to carry on the development of the mine, and that Messrs. Petrie, Walton, Laby, and Waddington be the first committee of management. The other rules were similar to those approved by the Stannaries Court, and in force on cost-book mines.

On the motion of the CHAIRMAN these rules were adopted by the meeting.

The SECRETARY then read the report, which was as follows:—Feb. 13.—This mine is situated in the parish of Gwennap, Cornwall, in the granite range to the east of Carn Brea hills, and west of the once rich United Mines, and on parallel lodes to that of the old Tresavean, which gave such large profits. There are five lodes traversing the entire length of this set, which is extensive, one of which lodes has been wrought to a depth of 130 fathoms below the adit level, from which enormous quantities of copper ore were raised, and profits to the amount of 70,000l. given in one year. In my opinion if this mine is resuscitated equal results will be met with, not only from this but from the other four parallel unwrought lodes, which can be easily reached by cross-cuts when the water is drained. The expenses attending the forking of the mine will be comparatively small, the water in this district being little, and I have no hesitation in saying it is one of the best speculations I know of in Cornwall now. There is an engine-house already erected for the reception of an engine, with offices, smithy, carpenter's shop, and other necessary buildings.—STEVENS DAVEY (Penhalls and Blue Hills Mines, St. Agnes).

Mr. GRANVILLE SHARP asked if the buildings were on the South Penstruthal side of the set?—The CHAIRMAN said they were, and the counting-house also.

Mr. WADDINGTON thought even before the mine was drained they would be able to cut a good lode from the shallow adit working from the old shaft, which in itself would, he believed, give them a good tin mine. It was the general opinion of the district that the mine would again make copper in depth, and the company was looked upon as something more than a speculation by those who knew the district. The committee were on the look-out for a good 60-hp. engine and 12 or 13-in. pitwork. The engine-house would be got ready as soon as possible, and then it would not take long to drain the mine.

Mr. HOCKING said it would take three or four months to drain the mine after they got the engine.

On the motion of Mr. G. SHARP, seconded by Mr. WALTON, a sum of 100 guineas was voted to Mr. Waddington for the great interest he had taken in bringing about the resuscitation of the mine. This resolution was cordially supported by the Chairman and Mr. McKeown.

Mr. WADDINGTON, in returning thanks, said, in his opinion, the mine had never had a fair trial, but he had a very high opinion of it. He had had a piece of the mantic raised from it assayed, and the result was that it yielded 2 per cent. of copper and from 30 to 40 per cent. of sulphur, and he had a stone of tin from the mine which was said to have produced as much as 60 per cent. of tin. It was the richest stone of tin he had ever seen.

The meeting then closed with a vote of thanks to the Chairman.

NORTH PENSTRUTHAL MINING COMPANY.

An ordinary general meeting of shareholders was held at the offices of the Company, Cornhill, on Wednesday.

Mr. JAMES PETRIE in the chair.

Mr. EDWARD ASHMEAD (the secretary) read the notice convening the meeting, and the statement of accounts for the four months ending Jan. 3, 1880. These showed on the "Dr." side that the call of 10s. per share made at the formation of the company realised 5000l. The sales of black tin realised a total of 5257. 15s. 5d., and the discount from merchants was 6l. 8s. 8d. On the "Cr." side the purchase of the mine, as per resolution of meeting on Nov. 18, 1879, amounted to 1700l.; the labour costs to Jan. 3, to 786l. 0s. 17d.; and the four months' merchants' bills, to 378l. 15s. 7d.; total, 1614l. 16s. 2d. The dues on the ore sold amounted to 14l. 11s. 6d., and the vote to Mr. Waddington was 105l. The liabilities were sundry lords for dues, 14l. 11s. 6d., and the assets (consisting wholly of cash at the Alliance Bank and at Messrs. Williams and Gyllis) amounted to 562l. 4s. 7d.

Mr. ASHMEAD then read the following reports from the agents:—

Feb. 23.—The Highburrow Shaft, sinking under the 63: Since the last general meeting we have sunk the shaft 6 fms. 3 ft., and it is now 17 fms. 4 ft. under the 63. For the last 5 ft. sinking the lode has undergone a great change in its nature, and is now producing yellow and grey copper ore. We are still intersecting branches of the lode coming in from the north side. We are still intersecting the lode in a set quite settled since the late disruption by the elvan course. I regard this recent improvement as being highly important, and I have every reason to believe we are just entering a good productive lode. I should, therefore, like to continue the sinking of the shaft for another month before driving east and west of the course on the lode. In the 88, driving west of the shaft we have driven 6 fms., and it is now extended about 19 fms. from the shaft. The lode is very much increased in size, being now 5 ft. wide, a space for driving, and producing good work for tin, but is still hard and spare for driving. In the 46, driving east of shaft, we have driven 5 fms. 3 ft., and it is now extended 44 fms. east of the shaft. The lode is producing good work for tin. In the winn sinking under the 34 fms. level, east of Highburrow shaft, we have sunk 5 fms., and shall communicate with the 46 below during the next month, which will lay open a large piece of tin ground for stoping. We have sunk a winze in the bottom of the 34, west of Highburrow shaft, and holed to a stop in the back of the 46 below. We have now set this ground to stop, by four men and two boys, at 32s. 6d. per 100 mcs., which will leave a good profit to the stop 14 fms. In the 58 cross-cut driving north of Highburrow lode we have driven to intersect the Highburrow lode in about 16 fms. further driving. In the 46 cross-cut driving south of Highburrow lode we have driven 6 fms., and it is now extended 71 fms. It has been very hard and spare for driving since the last general meeting, but from the distance already driven we cannot be very far from the 40 ft. tin lode, but I

the success of the company, owing in a great measure to the great ability displayed by Capt. Absalom Francis, of Goginaw, in the opening out of this important and valuable mine. A vote of thanks having been given to the Chairman the meeting terminated.

THE LONGWALL SYSTEM OF WORKING COAL.

At the Manchester Geological Society's meeting, held on Tuesday at Manchester, Mr. E. W. BINNEY, the Chairman, stated that a letter had been received from Mr. G. Forbes, of Glasgow, who had promised to exhibit to the members at their next meeting an instrument known as the Dampscope, which he had invented for indicating fire-damp in mines, and he (the Chairman) would be glad to see present at that meeting any gentleman interested in the subject.

Mr. JOHN PLANT, F.G.S., next read a paper, prepared by himself and Mr. J. Beswick Perrin, "On Concretionary Nodules of Limestone and Foliated Mouldings," which had been found in the Permian Marls in sinking a mine shaft near Leigh, upon which a discussion arose.

Mr. W. J. GRIMSHAW, F.G.S., next read a paper "On the Longwall System of Working Coal," which had been prepared by himself and Mr. Herbert Phillips. In the course of the paper, which Mr. Grimshaw explained would be followed by a second on the same subject, the reader stated that the object in view was not so much that of drawing comparisons, which might seem invidious, as of throwing into greater prominence those advantages for which the longwall system was peculiar. The same subject had received treatment from various minds, whose handling had been strong and forcible, but in the present paper somewhat new ground was broken, by introducing examples of longwall working from actual experience, and the results of which had been more or less successful. It was the aim of every manager opening out a new mine to adopt such an arrangement as would, in his judgment, most effectually minimise the natural disadvantages of the seam and the risks of working it. A comparatively bad seam well opened out and well worked was less expensive than a good seam badly worked. In the primitive opening out of our coal seams the mode of excavating would be more experimental than decided. Lacking the guidance of experience the working policy would of necessity be a tentative one, and the method ultimately adopted would be materially affected by accident and the temperament of the manager. All systems were more or less marked by the individuality of the proprietor or originator, and every system had some central point from which radiated all its modifications and adaptations. Simplicity itself the original system might be, embodying perhaps one or two fundamental ideas, but different experiences were brought to bear until the outcome was a system well nigh perfect in method and intelligibility, though it might fall far short of the best possible system applicable to the circumstances. Since the publication of the Mines Inspectors' reports last year much attention had been drawn to the longwall system by an important declaration of opinion by Mr. Evans, Government Inspector for the Midland District. In the Blue Book, 1878, Mr. Evans said "it was worth recording the fact that over 20,000,000 tons of coal have been raised since the last fatal accident, and 26,700,000 tons of coal were produced for one life lost. The question may be asked how are these results obtained? In my opinion it is in a great measure due to the system employed. For the most part the longwall system is the recognised plan. Care is taken to fill with debris all places from which coal has been excavated, so as to make it impossible at any time to have a large accumulation of gas." It was not an easy matter to give a definition of the longwall system, as its modifications were so numerous. However, any system of working the coal in faces of greater or less length, and bringing the produce therefrom on roads packed together the goaf, might be for their purpose termed the longwall system. The packing of the roads and the goaf generally was an extremely important matter, and on it in a great measure depended the success or failure of the system. The object of packing was the substitution of the best possible resistance to the roof in lieu of the coal taken out. The number and size of the packs in a certain length of faces must depend upon the quantity of waste materials made in getting the coal. If, as sometimes was the case, the spare material was abundant, the difficulty was to stow it all in the goaf. Where the other condition was present, that was a total absence of packing material, that fact would have an important influence upon the length of the stalls, and in consequence upon the haulage arrangements. Let them take an extreme case in which every particle of matter between the roof and the floor was sent out. The result in a short time would be an open goaf of dangerous extent. There was, however, one way in which that extreme condition might be met; that was by the adoption of short stalls and thick rippings. Sufficient ripping must be taken in the gateways to permit of a long pack being placed on each side of the gate-road, and to allow of several small ones in the intermediate space between the gates. Some, and not unimportant assistance might be derived from a judicious use of cod chocks.

After the first rupture of the roof the work of finding packing stuff might be less difficult, as the goafs might provide it in any quantity. Very little, however, could be expected in this particular if the roof were rock. Its occurrence would depend upon the pliability of the measures overlying the coal. If a happy medium were the condition, in which there was a sufficiency of material for packing without being too abundant, the length of the stalls would then only require to be adjusted to the getting facilities of the seam. In one of the seams of the Midland Counties, where there was enough and little more of pack dirt, the length of the stalls was as much as 100 yards, and the capability 30 to 35 tons per day. It was more than likely that the want of packing material had had much influence in hindering the adoption of the longwall system of getting coal, but it was generally concluded in the Midland district that there were no natural conditions utterly opposed to the working of coal on the longwall principle. Natural conditions varied greatly, even locally; but the special adaptation of longwall working which would be likely to suit the existing conditions would be soon determined upon by experience. Perhaps in districts apart from the Midland Counties natural conditions occurred such as had never been encountered by the longwall system, and one of these might perhaps be the great thickness of the seams, but it was probable that even this would be no detriment to the longwall system in the latter district. All conditions of roof had been worked by longwall; all qualities of hardness of coal; all kinds of floor; all degrees of gas generative power in coal had been encountered; all common conditions, such as gradients, depths, clear and dislocated fields, and all thickness of seam from 12 in. up to 14 ft. It was in the peculiar combination of natural conditions that the test of a system lay. Mr. Grimshaw then by means of a number of plans and diagrams of recent workings proceeded to explain different methods of carrying out the longwall principle, and the development of the system which had been carried out in various collieries.

Mr. WOODWARD said the systems which Mr. Grimshaw had described did not exactly represent the system worked in the Manchester district. In seams of 8 to 9 ft. thick it was a matter of very considerable difficulty and expense to put up a pack wall. In those thick mines it was difficult to produce sufficient pack. He had great pleasure in proposing a vote of thanks to the gentlemen who had prepared the papers. The members were very much indebted to them for bringing the subject forward, because it was essential that as far possible they should enlighten themselves upon all the systems of coal working in use.

Mr. BURROWS said he had great pleasure in seconding the resolution. He had followed the reading of the paper with great interest, and he was glad to hear there would be a second paper on the same subject. It seemed that the Midland men, who were so devoted to the longwall system, had their mines lying pretty flat; but where they had mines with gradients of 1 in 4 or 5, which was a very common thing in the Manchester district, the difficulty was in getting the coal away from the face. Where they could take their coal away in any direction with very little difficulty the matter was much more simple.

The CHAIRMAN observed that in getting coal each district had its peculiar features, and what would suit one district might not suit another. He had seen the longwall system carried out to great perfection in the neighbourhood of Chesterfield, and modifications of

the pure longwall system he had seen in other places, but a great deal had to be considered with regard to the various conditions which had to be encountered. Some people would contend for the pillar and stall system and others for the longwall principle. The matter was one of great practical importance, and after the papers had been printed no doubt a very useful discussion might arise upon it.

Mr. PERRIN said he would like to know what had been Mr. Grimshaw's experience with regard to the elimination of gas from the workings by the longwall system, and whether it had not been that the gas was more readily eliminated by this system than by the pillar and stall system?

Mr. GRIMSHAW said that was a matter which would be gone into fully in the second paper.

The vote of thanks having been passed, the proceedings were brought to a close.

THE METEOROLOGICAL SOCIETY.

The usual monthly meeting of members was held on Wednesday, Feb. 18, Mr. G. J. Symons, F.R.S., president, in the chair.

Dr. J. S. Cameron, Dr. F. E. Carey, J. B. Charlesworth, A. Collette, S. Forrest, J. G. Gamble, H. J. Marten, J. Hixon, B.A.; W. P. Probert, LL.D., S. Rostron, W. P. Swainson, and E. W. Wallis were elected fellows.

The papers read were—
"On Typhoons in China, 1877 and 1878," by Lieut. A. Carpenter, R.N.
"Note on the Reports of Wind Force and Velocity during the Tay Bridge Storm, Dec. 28, 1879," by R. H. Scott, F.R.S. These reports seemed to show that the velocity of the wind on that occasion was not so high as was generally supposed, and had been frequently exceeded, but that some of the gusts were very violent.

"On the Frost of December, 1879, over the British Isles," by W. Marriott, F.M.S. Exceptionally low temperatures were registered all over the British Isles from Dec. 1 to Dec. 7. On Dec. 1 the lowest temperature was 2°, at Ketton, near Stamford, and the next lowest was 5°, at Trent College. The temperature continued low throughout the day, at several places not rising above the freezing point. On Dec. 2 the cold was more intense. In the counties of Leicester, Lincoln, and Nottingham the temperature fell below zero, the lowest being 4.5°, at Coston, near Melton Mowbray. Temperatures between zero and 10° were registered in the north and south of Scotland and along the central part of the north of England to the midland and eastern counties, while over the whole of England, Scotland, and Ireland, with the exception of the sea coast stations, the temperature fell below 20°. On Dec. 3 the temperature was more evenly distributed, and not quite so intense as on the previous day; however, in the North Riding of Yorkshire and the valley of the Tees readings at and below zero were registered, the lowest being 2°, at Gainford. On Dec. 4 intensely cold weather was experienced over the south of Scotland and the north of England; the lowest reading obtained was 23°, at Blackadder, in Berwickshire; 16° was also registered at Springwood Park, near Kelso, and readings of 5° were reported at Haddington, Melrose, and Corbridge-on-Tyne, and 4° at Alston. Temperatures below 10° were registered over the south and south-west of Scotland, and over the north of England as far as the valley of the Trent, and also in the eastern counties, while over almost the whole of England, Scotland, and Ireland the temperature fell below 20°. In some parts of the south of Scotland and the border counties the maximum temperature during the day did not rise to 20°. On Dec. 5 the minimum temperature was not so low as on the previous day, there being a cloudy sky, and a general fall of snow. In Ireland, however, this was the coldest day of the month. On Dec. 6 the temperature fell considerably in Derbyshire, Nottinghamshire, and Yorkshire, readings of 3° being recorded at Trent, 1° at Buxton, and zero at York and Stanley. At many places the maximum temperature during the day was much below the freezing point. On Dec. 7 very low temperatures were registered over the whole of the north and east of England; the lowest reported was 10°, at Ketton, near Stamford. The temperature fell below zero in the counties of Essex, Leicester, Derby, Lincoln, Nottingham, and York, and also in the south of Scotland, while over almost the whole of the north-east and central part of England, as well as a portion of the south-east district, the temperature fell to 10° or below. Readings below 20° prevailed over nearly the whole of England and Scotland and the centre of Ireland. The maximum temperature during the day at a few places was extremely low, the thermometer at Appleby only recording 12.4°, and that at York 18°. During the next few days a little warmer weather prevailed, but on Dec. 11 the temperature fell below 20° over the central part of England, Scotland, and Ireland. Low temperatures were also experienced at most places on Dec. 12. Milder weather continued for the next few days, but on Dec. 17 the temperature again fell below 20° over the whole of the south of England. Low temperatures also prevailed on Dec. 18, 21, 23, 24, and 26, while the maximum temperatures at many places on Dec. 21 and 26 did not reach 32°. At almost all the inland stations frost occurred on an average of about 25 days during the month, and temperatures below 20° were registered from 8 to 13 days at several places. The only station where frost was not felt was Scilly, the lowest temperature recorded there being 33° on Dec. 2. The only comparatively mild districts were the west and south of Ireland and the extreme south-west of England. Even the seaside health resorts which are reputed for their mild climates were not exempt from the cold, the temperature falling below the freezing point on 11 occasions at Ventnor, 15 at Torquay, 20 at Sidmouth and Eastbourne, and 24 at Ramsgate and Worthing. During the time of the cold weather the barometer was very high over these islands, and an anticyclone was formed over those districts where the lowest temperatures were recorded. That the cold was the result chiefly of radiation is shown by the great difference in temperature at the hill and valley stations. For instance, at Farley, 640 ft. above sea level, 17.7° was registered on Dec. 7, while at Oakmoor, 300 ft. lower, in the valley of the Churnet, and less than a mile distant from Farley, the temperature fell to 1.1°. The effect of the cold upon the health of the community was very great. In London the number of deaths referred to diseases of the respiratory organs increased to 799 in the week ending Dec. 20, and exceeded the week average by 288. The public journals record the fact that several persons were frozen to death in various parts of the country. The frost also caused great injury to plants, shrubs, and birds.

TESTING OF METALS.—An interesting communication to the members of the Institution of Mechanical Engineers, by Mr. David Kirkcaldy, has just been issued, and contains facts which should be within the knowledge not only of all connected with the Institution but of the public generally. It seems that Kirkcaldy's experiments, published as originally reported by him, did not tend to lead to the conclusions which it was desired to draw, and hence the means of identifying the experiments has been accidentally or otherwise destroyed by recording them under different names; thus experiments made for John Penn and Son and for James Carpenter are mentioned as made for Knight, and important footnotes are sometimes omitted, and at other times the body of the report is unfairly interpreted instead of being given in the reporter's own words. The misrepresentation which Mr. Kirkcaldy complains of certainly demands a searching investigation by the Institution of Mechanical Engineers in order that the discredit which has been thrown upon it may be removed, or the report repudiated. Mr. Kirkcaldy's complaint is practically that the report is not that of the Research Committee, whose names were to give it reliability, but of a deputy appointed without the exercise of the necessary caution, and he says the committee have apparently left the matter entirely in the reporter's hands to act wholly as he thought proper, without any supervision. Mr. Kirkcaldy then puts the question, and that with all earnestness—Was it right and proper, in the cause of science and of truth, for Dr. Siemens and the others to allow their names to be enrolled as members of committees on mechanical research if not fully prepared to give the matter a fair share of their time and the best of their ability? Referring to Mr. William Anderson's report to the sub-committee, Mr. Kirkcaldy says—How does it come to pass that he makes no mention whatever of "Kirkcaldy's Experiments on Wrought-Iron and Steel," containing

as it does an account of those experiments which elicited the marked effects produced as regards the enormous increase in the strength and toughness of steel by being hardened in oil, which led to the introduction of oil-hardened steel tubes into the guns manufactured at the Royal Arsenal, Woolwich, by Armstrong, by Vavasseur, and by others? I never received any reward for my important discovery, to anyone else to befriend me in the matter, but that need be no reason for withholding from me some recognition of my services. Had those who were so much benefited by these results, including Messrs. Firth, of Sheffield, given me the means of helping on further experimental enquiries upon which my heart was so set I would have been satisfied, and they, after all, would have been the greatest gainers; but, No; so I drew my own conclusions, and have published no more results of my various experimental enquiries! The opponents of patents would fain make the world believe that manufacturers would of their own accord liberally reward the labours of discoverers and inventors! Can Mr. Anderson plead ignorance of my experiments, or did he consider it beneath the dignity of the research committees to take any notice of the patient labours of one who happened for five years to be his next-door neighbour in The Grove, Southwark-street? The lately-elected President of the Institution of Civil Engineers in his address stated that "the strength of steel might be greatly improved by tempering in oil—a process now much in use," but made no allusion to my name, nor to the benefits derived from my upwards of 20 years' experimental investigations as to the strength and other mechanical properties of constructive materials. It cannot, however, be said that the names and the doings of the Barlows were not duly heralded in the address!

SOCIETY OF ENGINEERS.—At the meeting on Monday a paper will be read "On the Utilisation of Coal Slack in the Manufacture of Coke for Smelting," by Mr. G. M. Ward, the leading features of which are as follows:—Separation of shale pyrites and other impurities, temperature at which coal should be coked, degrees of heat produced by the presence of carbon and hydrogen, sulphur in coal as pyrites, the corroding action which sulphur has on iron and copper, tests of purity, porosity, density, and hardness of coke. Descriptions of coal washing machines, crushing machines, screening machines, and baking ovens.

FOREIGN MINING AND METALLURGY.

It is stated that the administration of the Belgian State Railways is about to give out an order for a first lot of 1500 to 1600 trucks, besides 100 locomotives. The Minister of Public Works must, however, first obtain the necessary credits from the Belgian Legislature. The contract prices are to be those of the last adjudication, a small allowance being, however, made for the recent advance in the rates current for raw materials. It appears that orders for 43 locomotives for the Belgian State lines are already in course of execution at seven Belgian establishments, so that the tractive power at the disposal of the State lines must be shortly materially increased. At the last metallurgical bourse at Brussels there was less activity in the demand for iron, but prices experienced no reduction. After the recent great advance in prices it was only natural that the market should experience a check. The administration of the Belgian State railways has let a contract for turn-tables at prices showing an advance of 36l. to 40l. per table on the rates current at the previous adjudication of a similar character.

Prices of coal have been sustained with firmness in Belgium. Coal follows, of course, the fortunes of the iron trade in Belgium as elsewhere; and the Belgian iron trade being firm Belgian coal is firm also. Industrial coal is quoted at Charleroi at 11s. 2d. to 12s. per ton, whilst coke has brought 1l. 4s. per ton. Very similar rates have prevailed in the Liège basin. In the Mons basin unwashed coke has advanced 1s. 8d. per ton. The General Company for Promoting Industry in Belgium has purchased the St. Martin Collieries at Marchienne-au-Pont for 13,440l. The Belgian coal trade is still complaining of the scarcity of rolling stock on the Belgian State Railways, and has invoked the aid in the matter of the senators representing the coal districts of the Hainaut, Liège, and Namur.

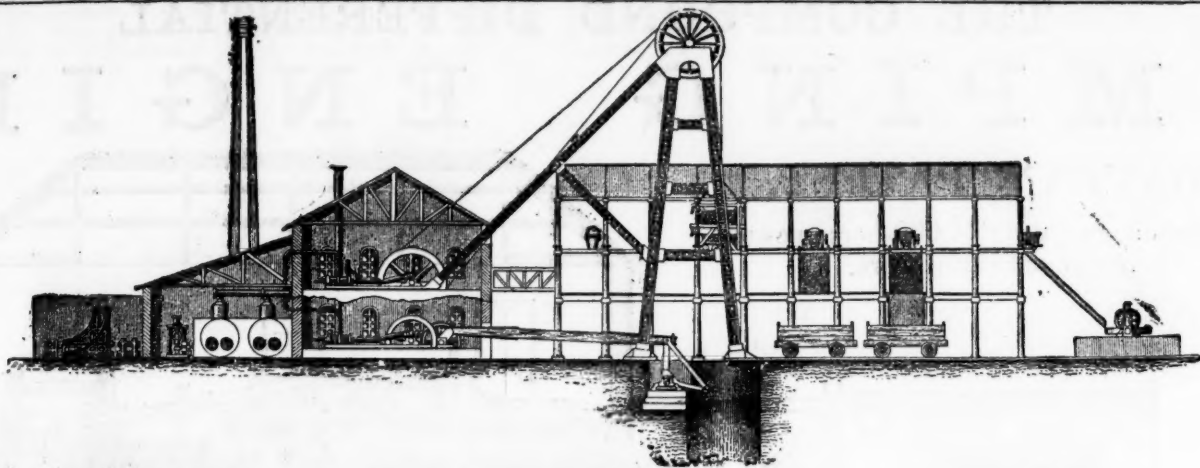
There has been no material change in the price of iron in the French department of the Haute-Marne. It is not unusual, however, to witness little advances in price as regards small orders for pressing delivery. Coke-made iron has been quoted in the Haute-Marne at 9l. 12s. to 10l. per ton; mixed iron at 10l. 8s. to 10l. 16s. per ton; and charcoal-made at 11l. 4s. to 11l. 12s. per ton. English plates have made 11l. 4s. to 11l. 8s. per ton. Ordinary axles are quoted at 10l. 16s. per ton. The demand for castings or worked pig is active, especially as regards articles required for business purposes. Pipes are quoted at 8l. per ton. In the Nord the forgemasters have fixed the price of merchants' iron at 9l. 12s. per ton, and that of girders at 10l. per ton, with the usual scale per class. In the Ardennes the forgemasters have carried iron to 9l. 12s. per ton. A further advance of 5 per cent. has also been made in plates; a similar advance took place Jan. 20. The Northern of France Railway Company has sold 2000 tons of old rails to the Northern and Eastern Mines and Ironworks Company at 6l. 1s. 8d. per ton. The Paris, Lyons, and Mediterranean Railway Company has also sold 2000 tons of similar rails to an American company at 5l. 18s. 4d. per ton, delivered at Cette.

The French coal trade continues to exhibit an upward tendency. The Montataire Ironworks have contracted with French collieries for the delivery of 120,000 tons of coal in one lot. This fact is regarded as an indication of a confident belief in the maintenance of present prices, and even in a further advance.

THE DIAMOND.—What Mr. Mactear has failed to do Mr. J. Bantline Hannay has succeeded in accomplishing—namely, the production of the diamond in a chemical laboratory. It will be remembered that Mr. N. Story-Maskelyne, of the British Museum, pronounced Mr. Mactear's discovery to be defective in one essential point, but he now states that Mr. Hannay, a Glasgow gentleman, and a member of the Chemical Society of London, has entirely succeeded in artificially producing fragments of the precious mineral. The particles examined by him satisfy the characteristic tests of diamond, and he says:—"There is no doubt whatever that Mr. Hannay has succeeded in solving this problem, and removing from the science of chemistry an opprobrium so long adhering to it; for, whereas the larger part of the great volume recording the triumphs of that science is occupied by the chemistry of carbon, this element has never been crystallised by man till Mr. Hannay achieved the triumph which I have the pleasure of recording. His process for effecting this transmutation, hardly less momentous to the arts than to the possessors of a wealth of jewellery, is on the eve of being announced to the Royal Society."

THE FORTH BRIDGE.—An excellent chromo-lithograph of the Forth Bridge, designed by Sir Thomas Bouch, the builder of the now painfully celebrated Tay Bridge, has just been completed by Mr. Bartholomew, of Edinburgh, and full reliance may be placed upon the accuracy of the view, as it is prepared from the designer's large elevation and working plans, and has been adapted to the actual position which the bridge will occupy in the landscape, the artist having had pointed out to him upon the ground the exact situation of the structure. The total length of the bridge is 1½ mile; the length of the two great spans 1600 ft., or nearly one-third of a mile each; the height of the bridge above high water 150 ft.; the height of the towers 600 ft.; and the total weight of the chains 6000 tons. The bridge will form a handsome picture for the engineer's office.

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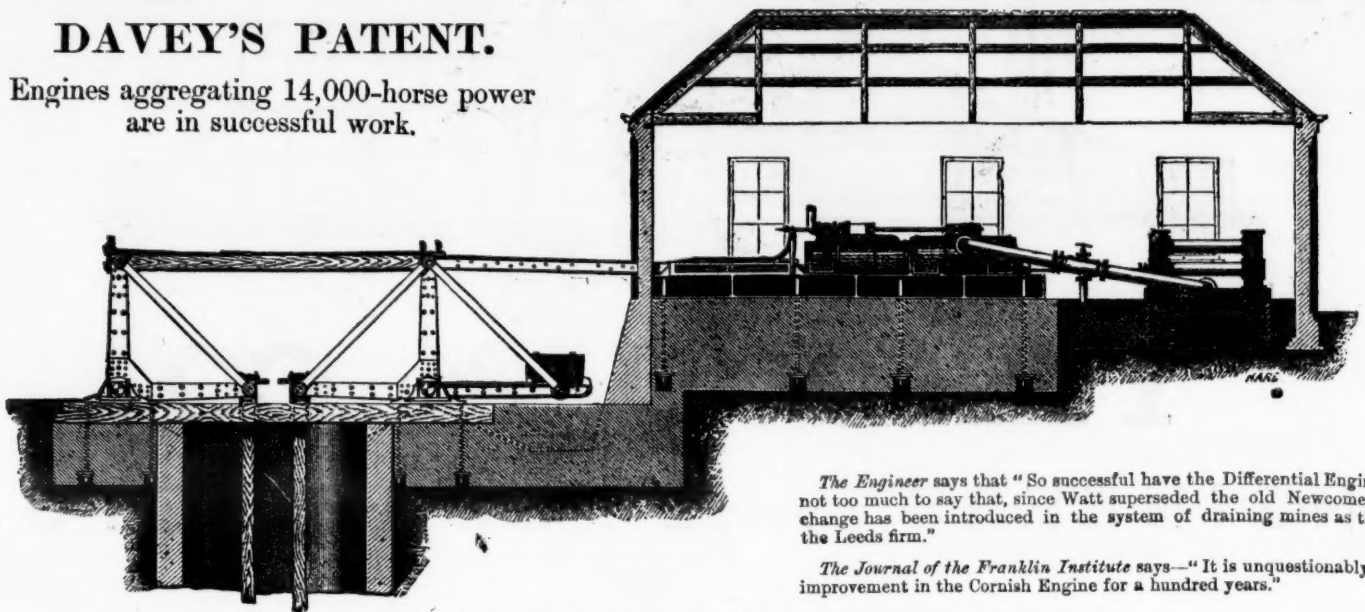
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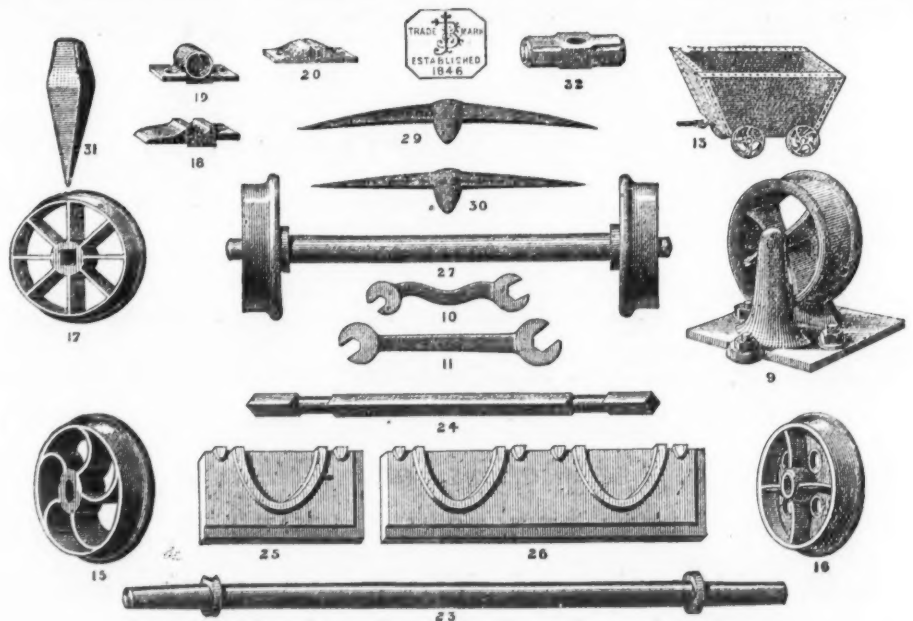
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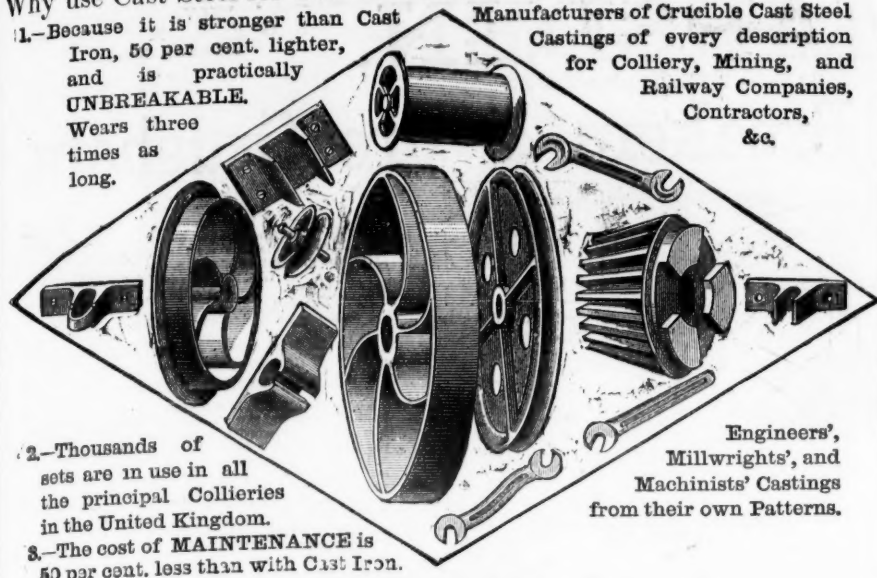
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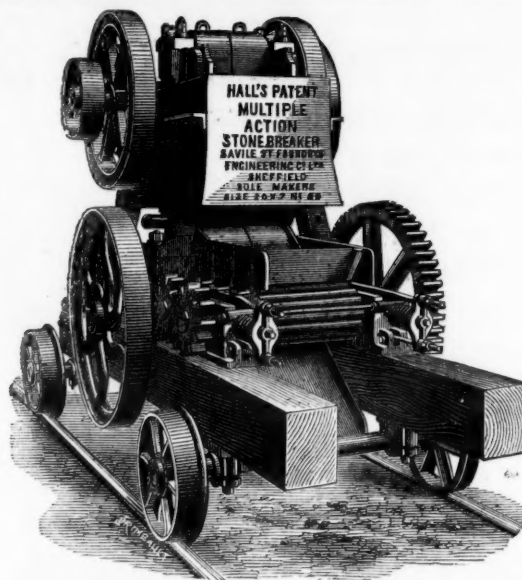
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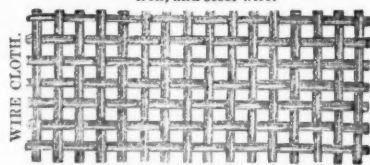
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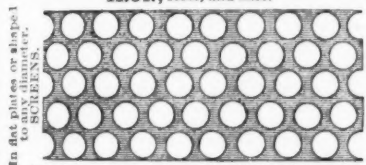
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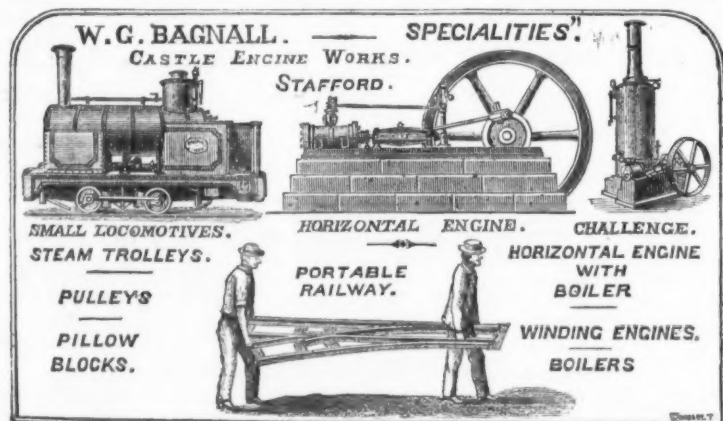
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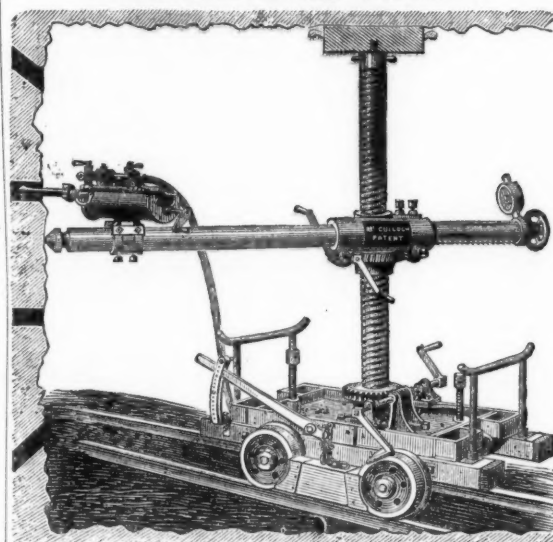


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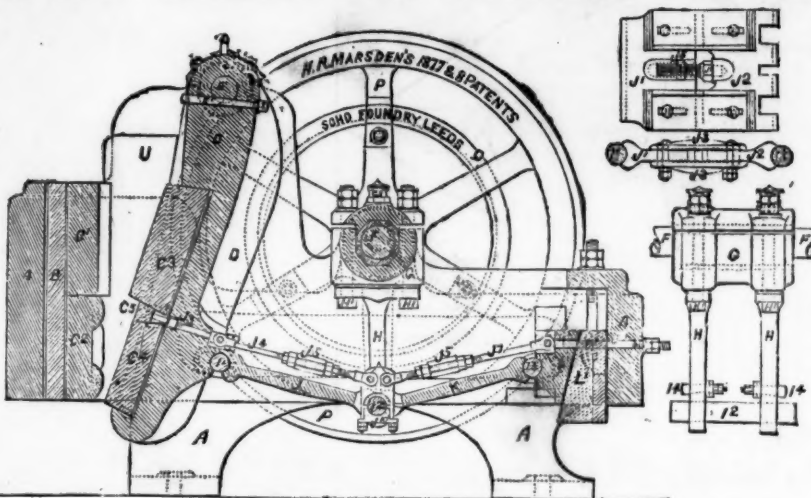
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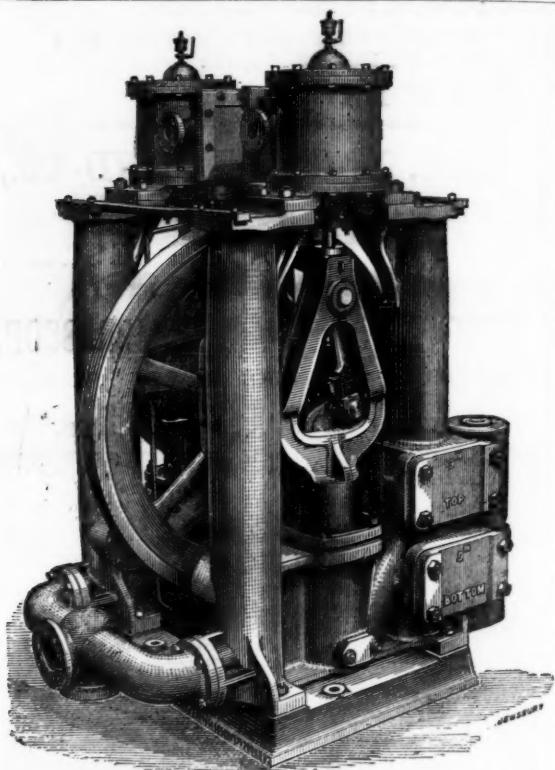
BLAKE'S STONE BREAKER.—Statement made by the Managing Director of the St. John del Rey Mining Company, Mr. John Hockin, with regard to six months' practical working of Blake's Stone Breaker, affording facility for judging of the relative economy of machine and hand labour in this kind of work, and also of the cost of getting the Stone Breaker to work in difficult places. The price paid to Mr. Marsden for the machine referred to by Mr. Hockin was £150, and adding to this the cost of engine, carriage, and fixing, the aggregate cost to the company of the Breaker in working order was £500. By this outlay the company is enabled to dispense with the labour of 55 people, the value of which is £800 per annum. The cost of working the machine could not be more than the wages of about five men (the machine requires but one man to feed it, so that the rest would be for engineer, fuel, oil, &c.), and allowing for interest on outlay and for renewal when necessary, the saving must be enormous.—Mining Journal.

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